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(54) Title: VIRULENCE GENES, PROTEINS, AND THEIR USE

(57) Abstract: A series of genes from *Neisseria meningitidis* are shown to encode products which are implicated in virulence. The identification of these genes therefore allows attenuated microorganisms to be produced. Furthermore, the genes or their encoded products can be used in the manufacture of vaccines for therapeutic application.



**WO 01/85772 A2**

## VIRULENCE GENES, PROTEINS, AND THEIR USE

### Field of the Invention

This invention relates to virulence genes and proteins, and their use. More particularly, it relates to genes and proteins/peptides obtained from *Neisseria meningitidis*, and their use in therapy and in screening for drugs.

### Background of the Invention

*Neisseria meningitidis* is a Gram-negative bacterial pathogen that is implicated in septic shock and bacterial meningitis. This bacterium is a leading cause of bacterial meningitis in developed countries, and causes large-scale epidemics in Africa and China. In the UK, *Neisseria meningitidis* is the leading cause of death in childhood apart from road traffic accidents. The bacterium naturally inhabits the human nasopharynx and then gains access to the blood stream from where it causes severe septicaemia or meningitis. Although current anti-microbials are effective in eliminating the bacterium from the body, the mortality from meningococcal septicaemia remains substantial. It would be desirable to provide means for treating or preventing conditions caused by *Neisseria meningitidis*, e.g. by immunisation.

### Summary of the Invention

The present invention is based on the discovery of virulence genes in *Neisseria meningitidis*.

According to a first aspect of the invention, a peptide of the invention is encoded by an operon including any of the nucleotide sequences identified in claim 1, or a homologue thereof in a Gram-negative bacterium, or a functional fragment thereof, for therapeutic or diagnostic use.

The peptides may have many therapeutic uses for treating *Neisseria* infections, including use in vaccines for prophylactic application.

According to a second aspect, a polynucleotide encoding a peptide defined above, may also be useful for therapy or diagnosis.

According to a third aspect, the genes that encode the peptides may be utilised to prepare attenuated microorganisms. The attenuated microorganisms will usually have a mutation that disrupts the expression of one or more of the genes identified herein, to provide a strain that lacks virulence. These microorganisms will also have use in therapy and diagnosis.

According to a fourth aspect, the peptides, genes and attenuated microorganisms according to the invention may be used in the treatment or prevention of a condition associated with infection by *Neisseria* or Gram-negative bacteria.

Description of the Invention

The present invention is based on the discovery of genes encoding peptides which are implicated in virulence. The peptides and genes of the invention are therefore useful for the preparation of therapeutic agents to treat infection. It should be understood that references to therapy also include preventative treatments, e.g. vaccination. Furthermore, while the products of the invention are intended primarily for treatment of infections in human patients, veterinary applications are also considered to be within the scope of the invention.

The present invention is described with reference to *Neisseria meningitidis*. However, all the *Neisseria* strains, and many other Gram-negative bacterial strains are likely to include related peptides or proteins having amino acid sequence identity or similarity to those identified herein. Organisms likely to contain the peptides include, but are not limited to the genera *Salmonella*, *Enterobacter*, *Klebsiella*, *Shigella* and *Yersinia*.

The experiments carried out to identify the virulence genes of the invention utilised *N. meningitidis* strain B. Homology searches were performed on the strain A database, however the proteins and genes from strain B are preferred.

Preferably, the peptides that may be useful in the various aspects of the invention have greater than a 40% similarity with the peptides identified herein. More preferably, the peptides have greater than 60% sequence similarity. Most preferably, the peptides have greater than 80% sequence similarity, e.g. 95% similarity. With regard to the polynucleotide sequences identified herein, related polynucleotides that may be useful in the various aspects of the invention may have greater than 40% identity with the sequences identified herein. More preferably, the polynucleotide sequences have greater than 60% sequence identity. Most preferably, the polynucleotide sequences have greater than 80% sequence identity, e.g. 95% identity.

The terms "similarity" and "identity" are known in the art. The use of the term "identity" refers to a sequence comparison based on identical matches between correspondingly identical positions in the sequences being compared. The term "similarity" refers to a comparison between amino acid sequences, and takes into account not only identical amino acids in corresponding positions, but also functionally similar amino acids in corresponding positions. Thus similarity between polypeptide sequences indicates functional similarity, in addition to sequence similarity.

Levels of identity between gene sequences and levels of identity or similarity between amino acid sequences can be calculated using known methods. In relation

to the present invention, publicly available computer based methods for determining identity and similarity include the BLASTP, BLASTN and FASTA (Atschul *et al.*, J. Molec. Biol., 1990; 215:403-410), the BLASTX program available from NCBI, and the Gap program from Genetics Computer Group, Madison WI. The levels of similarity and identity provided herein, were obtained using the Gap program, with a Gap penalty of 12 and a Gap length penalty of 4 for determining the amino acid sequence comparisons, and a Gap penalty of 50 and a Gap length penalty of 3 for the polynucleotide sequence comparisons.

Having characterised a gene according to the invention, it is possible to use the gene sequence to search for related genes or peptides in other microorganisms. This may be carried out by searching in existing databases, e.g. EMBL or GenBank.

Peptides or proteins according to the invention may be purified and isolated by methods known in the art. In particular, having identified the gene sequence, it will be possible to use recombinant techniques to express the genes in a suitable host. Active fragments and related molecules can be identified and may be useful in therapy. For example, the peptides or their active fragments may be used as antigenic determinants in a vaccine, to elicit an immune response. They may also be used in the preparation of antibodies, for passive immunisation, or diagnostic applications. Suitable antibodies include monoclonal antibodies, or fragments thereof, including single chain Fv fragments. Methods for the preparation of antibodies will be apparent to those skilled in the art.

Active fragments of the peptides are those that retain the biological function of the peptide. For example, when used to elicit an immune response, the fragment will be of sufficient size, such that antibodies generated from the fragment will discriminate between that peptide and other peptides on the bacterial microorganism. Typically, the fragment will be at least 30 nucleotides (10 amino acids) in size, preferably 60 nucleotides (20 amino acids) and most preferably greater than 90 nucleotides (30 amino acids) in size.

It should also be understood, that in addition to related molecules from other microorganisms, the invention encompasses modifications made to the peptides and polynucleotides identified herein which do not significantly alter the biological function. It will be apparent to the skilled person that the degeneracy of the genetic code can result in polynucleotides with minor base changes from those specified herein, but which nevertheless encode the same peptides. Complementary polynucleotides are also within the invention. Conservative replacements at the amino acid level are also



envisaged, i.e. different acidic or basic amino acids may be substituted without substantial loss of function.

The preparation of vaccines based on attenuated microorganisms is known to those skilled in the art. Vaccine compositions can be formulated with suitable carriers or adjuvants, e.g. alum, as necessary or desired, to provide effective immunisation against infection. The preparation of vaccine formulations will be apparent to the skilled person. The attenuated microorganisms may be prepared with a mutation that disrupts the expression of any of the genes identified herein. The skilled person will be aware of methods for disrupting expression of particular genes. Techniques that may be used include insertional inactivation or gene deletion techniques. Attenuated microorganisms according to the invention may also comprise additional mutations in other genes, for example in a second gene identified herein or in a separate gene required for growth of the microorganism, e.g. an *aro* mutation or, with regard to *Salmonella*, in a gene located in the SPI2 region identified in WO-A-96/17951.

Attenuated microorganisms may also be used as carrier systems for the delivery of heterologous antigens, therapeutic proteins or nucleic acids (DNA or RNA). In this embodiment, the attenuated microorganisms are used to deliver a heterologous antigen, protein or nucleic acid to a particular site *in vivo*. Introduction of a heterologous antigen, peptide or nucleic acid into an attenuated microorganism can be carried out by conventional techniques, including the use of recombinant constructs, e.g. vectors, which comprise polynucleotides that express the heterologous antigen or therapeutic protein, and also include suitable promoter sequences. Alternatively, the gene that encodes the heterologous antigen or protein may be incorporated into the genome of the organism and the endogenous promoters used to control expression.

More generally, and as is well known to those skilled in the art, a suitable amount of an active component of the invention can be selected, for therapeutic use, as can suitable carriers or excipients, and routes of administration. These factors would be chosen or determined according to known criteria such as the nature/severity of the condition to be treated, the type and/or health of the subject etc.

In a separate embodiment, the products of the invention may be used in screening assays for the identification of potential antimicrobial drugs or for the detection for virulence. Routine screening assays are known to those skilled in the art, and can be adapted using the products of the invention in the appropriate way. For example, the products of the invention may be used as the target for a potential drug,

with the ability of the drug to inactivate or bind to the target indicating its potential antimicrobial activity.

The various products of the invention may also be used in veterinary applications.

5       The following is a brief overview of the experimental procedure used to identify the virulence genes.

Signature-tagged mutagenesis (STM) (Hensel *et al.*, Science, 1995; 269: 400-403) was used to identify genes in *N. meningitidis* that are essential for septicemic infection. In STM, individual mutants are tagged with unique sequence identifiers, 10 allowing large numbers of mutants to be analyzed simultaneously. However, it is necessary to construct libraries of insertional mutants, so far a limitation in studying *N. meningitidis*. Mutagenesis was accomplished successfully using a method in which *Neisseria* DNA is modified *in vitro* using purified components of Tn10 transposition. As *N. meningitidis* efficiently takes up exogenous DNA, the modified alleles are then 15 introduced into *N. meningitidis* by transformation. The mutants can then be screened for their ability to cause systemic infection.

The vector pSTM115 (Sun *et al.* Nature Medicine, 2000; 6(11): 1269-1273) was used as the transposon donor for *in vitro* mutagenesis. 96 pSTM115 derivatives, each containing unique signature tags, were included in 96 separate transposition reactions. 20 The modified genomic DNA was repaired, and returned to the host by transformation. To determine whether Tn10 insertion occurs at diverse sites, 40 transformants were assessed from a single transposition reaction by Southern blot analysis. Each had a single, distinct Tn10 insertion. To establish whether Tn10 integration was stable during systemic infection of infant rats, the hybridization patterns of six mutants before and 25 after passage through rats were compared. Identical hybridization patterns before and after infection were obtained.

The experimental conditions used were as follows:

Bacterial strains and growth:

C311+ is an ET-5, serogroup B *N. meningitidis* isolate from a patient with 30 invasive meningococcal infection (Virji *et al.*, Mol. Microbiol., 1991; 5: 1831-1841). *N. meningitidis* was grown on brain-heart infusion medium with 5% Levinthal's supplement. *E. coli* strains were propagated on Luria Bertani media. Kanamycin was added to solid media as required at concentrations of 75 and 50 µg/ml for *N. meningitidis* and *E. coli*, respectively.

35   *In vitro* transposition and insertion site characterization:

The pACYC184 origin of replication in pSTM115 was used to isolate the insertion site by marker rescue. Nucleotide sequencing was carried out using the dye-termination method (Perkin Elmer, Norwalk, Connecticut) with primers NG62 (5'-TTGGTTAATTGGTTGTAACACTGG-3') (SEQ ID NO. 209) or NG99 (5'-ATTCTCATGTTTGACAGCG-3') (SEQ ID NO. 210). Homology searches were performed against protein databases (<http://www.ncbi.nlm.nih.gov/>), including the serogroup A and B *N.meningitidis* and the *N. gonorrhoeae* genome sequences ([http://www.sanger.ac.uk/Projects/N\\_meningitidis](http://www.sanger.ac.uk/Projects/N_meningitidis) and <http://www.tigr.org>, and <http://dna1.chem.ou.edu/gono.html>, respectively).

10 Tag amplification, cloning and Southern blot analyses:

Hybridizations and preparations of dot blots were performed as described in Hensel *et al.*, *supra*, except that tags were amplified with primers NG13 (5'-ATCCTACAACCTCAAGCT-3') (SEQ ID NO. 211) and NG14 (5'-ATCCATTCTAACCAAGC-3') (SEQ ID NO. 212), and PCR products, rather than plasmid DNA, were fixed onto membranes. Oligonucleotides S1 (5'-AAGAGATTACGCGCAGACC-3') (SEQ ID NO. 213) and S2 (5'-AATACGCAACCGCCTCTC-3') (SEQ ID NO. 214) anneal to sequences in pSTM115 flanking the 'signature tags' and were used to amplify a 367-base-pair product from each pSTM115 derivative. For Southern blot analysis, the kanamycin-resistance cassette from pSTM115 was labelled using the random primers method (NEB), and was used as a probe against genomic DNA digested with *Cla*I.

Animal model:

For screening the STM pools, mutants were grown individually for 18 h in microtiter plates. The bacteria were pooled, then re-suspended in PBS. Wistar rats (5 days old) were inoculated intraperitoneally with 100 µl of the suspension, and were monitored for 48 h. To establish the competitive index of a mutant, wild-type and mutant bacteria were grown for 18 h on solid media and collected into PBS, and rats were inoculated with a 1:1 ratio of mutant to wild-type cells in a total inoculum of  $5 \times 10^6$  CFU. The proportion of mutant (kanamycin-resistant) to wild-type (kanamycin-sensitive) bacteria was determined by plating replicate samples to media with or without added antibiotic.

The results of the homology searches are shown in Table 1.

Table 1

SEQ ID NO.	PROTEIN	ACCESSION NO.	ORGANISM
3 & 4	3'dehydroquinase synthase	NMB0647	N. gonorrhoeae
25 & 26	Glycosyl transferase	LSI2	N. gonorrhoeae
35 & 36	Polyribonucleotide nucleotidyl transferase	NMB0758	N. meningitidis
37 & 38	Phosphoribosyl formyl glycine synthase	PURL	E. coli
43 & 44	Shikimate dehydrogenase	AROE	N. meningitidis
47 & 48	Hypothetical 21.7 kD protein	NMB0673	N. meningitidis
53 & 54	Putative cell binding factor	NMB0345	N. meningitidis
57 & 58	Hypothetical protein	HI0633	H. influenzae
61 & 62	Na <sup>+</sup> /H <sup>+</sup> antiporter	NMBN0536	N. meningitidis
63 & 64	Chorismate synthase	AROC	V. anguillarum
67 & 68	Paraquat-inducible protein B	PQ15B	E. coli
71 & 72	5'-methyltetrahydropteroyl triglutamate-homocysteine methyl transferase	NMB0944	N. meningitidis
79 & 80	$\alpha$ -1,2 N-acetylglucosamine transferase	RFAK	N. meningitidis
83 & 84	Putative RNA methylase	NMB1348	N. meningitidis
89 & 90	L-lactate permease	NMB0543	N. meningitidis
91 & 92	ABC transporter	NMB1240	N. meningitidis
103 & 104	Probable GTP-binding protein	HI0393	H. influenzae
109 & 110	Capsule polysaccharide modification protein	LIPB	N. meningitidis
113 & 114	Hypothetical 17.8 kD protein	NMB0734	N. meningitidis
115 & 116	<i>E. coli</i> hypothetical protein	YIGC	S. typhimurium
119 & 120	Ribonuclease III	NMB0686	N. meningitidis
121 & 122	AMPD protein	NMB0668	N. meningitidis
123 & 124	5-methyltetrahydropteroyl triglutamate-homocysteine methyl transferase	NMB0944	N. meningitidis

133 & 134	Putative ATP-depenent RNA helicase	NMB1422	N. meningitidis
137 & 138	Putative RNA methylase	NMB1348	N. meningitidis
141 & 142	Shikimate dehydrogenase	AROE	N. meningitidis
143 & 144	Putative outer membrane protein	OMPU	N. meningitidis
145 & 146	TONB protein	TONB	N. meningitidis
147 & 148	Putative apolipoprotein N-acyl transferase	NMB0713	N. meningitidis
149 & 150	Transposase	NMB0991	N. meningitidis
153 & 154	UTP-glucose-1-phosphate uridylyltransferase	NMB0638	N. meningitidis
157 & 158	ADP Heptose-LPS heptosyl transferase II	NMB1527	N. meningitidis
161 & 162	Putative membrane-bound lytic murein transglycosylase B	NMB1279	N. meningitidis
171 & 172	Putative cell-binding factor	NMB0345	N. meningitidis
173 & 174	P-amino benzoate synthetase	PABB	H. pylori J99
177 & 178	5'-methyltetrahydropteroyl triglutamate-homocysteine methyl transferase	NMB0944	N. meningitidis
183 & 184	Conserved hypothetical protein	NMB0183	N. meningitidis
185 & 186	<i>E. coli</i> hypothetical protein	YIGC	S. typhi LT2

For the remaining sequences identified herein, no homology results were obtained.

The gene products were used to produce polyclonal antibodies that were tested in an Elisa assay against various *N. meningitidis* strains to evaluate their effectiveness as a vaccine candidate. The strains used were:

- 5 *Neisseria meningitidis* (B) Type 1000
- Neisseria meningitidis* (B) Type NGE31
- Neisseria meningitidis* (B) Type NGH15
- Neisseria meningitidis* (B) Type SW2 107
- 10 *Neisseria meningitidis* (B) Type NHG38
- Neisseria meningitidis* (B) Type NGE28
- Neisseria meningitidis* (B) Type 2996

This provides information as to the variety of *N. meningitidis* strains that are recognised by these antibodies.

*N. Meningitidis* was grown on Columbia agar with chocolated horse blood (Oxoid) for 14 hours at 37°C in 5% CO<sub>2</sub>. The cells were scraped from agar plates and  
5 resuspended in 20ml PBS in a 50ml tube. The cell suspension was heated for 30 minutes at 56°C to kill the bacteria.

A 50 µl sample of the heat-killed *N. Meningitidis* was spread on the Columbia agar with the chocolated horse blood and incubated for 18 hours at 37C, 5%CO<sub>2</sub>. This allows confirmation that all *N. Meningitidis* cells have been killed. The OD<sub>620</sub> of the  
10 suspension is adjusted to 0.1 OD units versus PBS.

#### Elisa with heat killed *N. meningitidis*

Elisa assays were carried out using the heat-killed *N. meningitidis* using the following protocol. Elisa plates were coated overnight with heat-killed cells (50µl of killed bacteria in PBS to each well of 96 well plate and incubated 4°C).

15 Standard Elisa protocols were followed, with all incubations at 37°C for 1 hour. PBS/3% BSA blocking solution, PBS/Tween 0.1% wash solution, anti-rabbit AP conjugate secondary antibody (Sigma) and Sigma Fast P Nitrophenyl phosphate detection reagent (Sigma) were utilised. The data was read at 405nm using an appropriate micro-titre plate reader. The sera used was that available seven days after  
20 the first booster vaccination (day 35 after first vaccination).

The antibodies tested were those raised against the gene products identified as SEQ ID NOS. 8, 102, 140, 158 and 202. In each case, the results showed that the anti-sera recognised several different strains of *N. meningitidis* B.

#### *Ex vivo/in vitro* screening.

25 Protection against meningococcal disease in humans has been associated with the presence of bacteriocidal antibodies against *N. meningitidis* (Goldscheider *et al.* J. Exp. Med., 1969; 129: 1307-1326). There is also evidence to suggest a correlation between the presence of detectable bacteriocidal activity and protection in an *in vivo* model (reference Martin, J. Bacteriol., 2000; 83: 27-31). Therefore, the antiserum  
30 generated was used to evaluate the bacteriocidal activity of the antibodies generated.

The bactericidal assays were performed with pre-immune sera and the corresponding rabbit antiserum raised against the candidate antigens. Commercially available rabbit serum was used as the complement source following pre-screening to eliminate complement only killing. Dulbecco's PBS (Gibco) was used as a buffer where

necessary. The *N. meningitidis* strain MC58, was grown at 37°C (5% CO<sub>2</sub>) for 14 hours prior to use in the assay.

200-400 CFU of MC58 in a 50µl volume were incubated in the presence of complement (50µl) with 100µl of serial dilutions of heat-inactivated serum. Samples at  
5 time zero were plated to Columbia agar with chocolate horse blood (Oxoid). After incubation for 60 minutes, the number of surviving bacteria was evaluated by plating to Columbia agar with chocolate horse blood (Oxoid). The bacteriocidal activity was expressed in terms of percentage of bacteria surviving after 60 minutes. All samples were tested in duplicate and plated in triplicate. All appropriate positive and negative  
10 controls were utilised. In each test sample, the bacteriocidal activity was substantially greater than that for the pre-immune sera.

*In vivo* screening.

To evaluate the protective efficacy of vaccine candidates, adult mice were immunised with the recombinant proteins identified herein as SEQ ID NOS. 102 and  
15 108 and the protective response determined by live bacterial challenge. For each vaccine candidate 15 six week old mice (6 week old balb/C mice) were vaccinated (subcutaneously) with 25µg of antigen on two separate occasions at three week intervals.

One week after the end of the immunisation schedule, the group was challenged  
20 with the homologous bacterial strain MC58. The bacteria were inoculated intraperitoneally in a volume of 500µl in Brain Heart Infusion/ 0.5% iron dextran media at a dose of 10<sup>7</sup> cfu. Previous results have shown that iron is required for initiation of bacteraemic disease in these animals. This model has previously been used to demonstrate the protective efficacy of vaccination (Lissolo *et al.*, Infect. Immun., 1995;  
25 63: 884-890).

Control groups included animals vaccinated with adjuvant alone (negative control) or with adjuvant combined with purified PorA (positive control). PorA is an outer membrane protein expressed exclusively by *N. meningitidis* and is the principal target for bactericidal antibodies induced by outer membrane vesicle vaccines. Monoclonal  
30 antibodies against PorA have also been shown to passively protect animals in the infant rat model. PorA however varies considerably between strains and so while it elicits some protection when challenged with a homologous strain, it is not an ideal vaccine candidate. Survival was monitored following challenge. The negative control showed no survival after 48 hours. Those vaccinated with PorA showed 6 survivors at 72 hours.

Those vaccinated with the proteins of SEQ ID NOS. 102 and 108 showed 5 and 3 survivors, respectively.



CLAIMS

1. A peptide encoded by an operon including any of the nucleotide sequences identified herein as SEQ ID NOS. 1, 3, 5, 7, 9, 11, 13, 15, 17, 19, 21, 23, 25, 27, 29, 31, 33, 35, 37, 39, 41, 43, 45, 47, 49, 51, 53, 55, 57, 59, 61, 63, 65, 67, 69, 71, 73, 75, 77, 79, 81, 83, 85, 87, 89, 91, 93, 95, 97, 99, 101, 103, 105, 107, 109, 111, 113, 115, 117, 119, 121, 123, 125, 127, 129, 131, 133, 135, 137, 139, 141, 143, 145, 147, 149, 151, 153, 155, 157, 159, 161, 163, 165, 167, 169, 171, 173, 175, 177, 179, 181, 183, 185, 187, 189, 191, 193, 195, 197, 199, 201, 203, 205, 207, of *N. meningitidis*, or a related molecule having at least 40% sequence similarity or identity at the peptide or nucleotide level in a Gram-negative bacterium, or a functional fragment thereof, for therapeutic or diagnostic use.
2. A peptide according to claim 1, wherein the sequence similarity or identity is at least 60%.
3. A peptide according to claim 1 or claim 2, wherein the sequence similarity or identity is at least 90%.
4. A peptide according to claim 1, comprising the amino acid sequence identified herein as SEQ ID NOS. 2, 4, 6, 8, 10, 12, 14, 16, 18, 20, 22, 24, 26, 28, 30, 32, 34, 36, 38, 40, 42, 44, 46, 48, 50, 52, 54, 56, 58, 60, 62, 64, 66, 68, 70, 72, 74, 76, 78, 80, 82, 84, 86, 88, 90, 92, 94, 96, 98, 100, 102, 104, 106, 108, 110, 112, 114, 116, 118, 120, 122, 124, 126, 128, 130, 132, 134, 136, 138, 140, 142, 144, 146, 148, 150, 152, 154, 156, 158, 160, 162, 164, 166, 168, 170, 172, 174, 176, 178, 180, 182, 184, 186, 188, 190, 192, 194, 196, 198, 200, 202, 204, 206 and 208.
5. A polynucleotide encoding a peptide according to any preceding claim, for therapeutic or diagnostic use.
6. A host transformed to express a peptide according to any of claims 1 to 4.
7. An attenuated microorganism comprising a mutation that disrupts the expression of any of the nucleotide sequences defined in claim 1.
8. A microorganism according to claim 7, wherein the mutation is insertional inactivation or a gene deletion.
9. A microorganism according to claim 7 or claim 8, wherein the microorganism is *Neisseria meningitidis*.
10. A microorganism according to any of claims 7 to 9, comprising a second mutation in a second nucleotide sequence.
11. A microorganism according to any of claims 7 to 10, for therapeutic or diagnostic use.

12. A microorganism according to any of claims 7 to 11, comprising a heterologous antigen, therapeutic peptide or nucleic acid.
13. A vaccine comprising a peptide according to any of claims 1 to 4, or the means for its expression.
- 5 14. A vaccine comprising a microorganism according to any of claims 7 to 12.
15. An antibody raised against a peptide according to any of claims 1 to 4.
16. Use of a product according to any of claims 1 to 12, for the manufacture of a medicament for use in the treatment or prevention of a condition associated with infection by *Neisseria* or Gram-negative bacteria.
- 10 17. Use according to claim 16, wherein the condition is meningitis.
18. Use according to claim 16 or claim 17, for veterinary treatment.
19. Use of a product according to any of claims 1 to 12, in a screening assay for the identification of an antimicrobial drug.

## SEQUENCE LISTING

&lt;110&gt; Microscience Limited

&lt;120&gt; Virulence Gene and Protein, and Their Use

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&lt;151&gt; 2000-05-08

&lt;160&gt; 214

&lt;170&gt; PatentIn Ver. 2.1

&lt;210&gt; 1

&lt;211&gt; 1674

&lt;212&gt; DNA

&lt;213&gt; Neisseria meningitidis

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(1674)

&lt;400&gt; 1

atg	ctg	acc	tat	acc	ccg	ccc	gat	gcc	cgc	ccg	ccc	gcc	aaa	acc	cac	48
Met	Leu	Thr	Tyr	Thr	Pro	Pro	Asp	Ala	Arg	Pro	Pro	Ala	Lys	Thr	His	
1				5				10					15			

gaa	aag	ccg	tgg	ctg	ttg	ctg	ttg	atg	gcg	ttt	gcc	tgg	ttg	tgg	ccc	96
Glu	Lys	Pro	Trp	Leu	Leu	Leu	Leu	Met	Ala	Phe	Ala	Trp	Leu	Trp	Pro	
			20					25					30			

ggc	gtg	ttt	tcc	cac	gat	ttg	tgg	aat	cct	gac	gaa	cct	gcc	gtc	tat	144
Gly	Val	Phe	Ser	His	Asp	Leu	Trp	Asn	Pro	Asp	Glu	Pro	Ala	Val	Tyr	
			35				40					45				

acc	gcc	gtc	gaa	gca	ctg	gca	ggc	agc	ccc	acc	cct	ttg	gtt	gcc	cat	192
Thr	Ala	Val	Glu	Ala	Leu	Ala	Gly	Ser	Pro	Thr	Pro	Leu	Val	Ala	His	
			50				55					60				

ctg	ttc	ggt	caa	atc	gat	ttc	ggc	ata	ccg	ccc	gtg	tat	ctt	tgg	gtt	240
Leu	Phe	Gly	Gln	Ile	Asp	Phe	Gly	Ile	Pro	Pro	Val	Tyr	Leu	Trp	Val	
65					70				75					80		

gcc gcc gcg ttc aaa cat ttg ctg tcg ccg tgg gct gcc gac ccg tat	288
Ala Ala Ala Phe Lys His Leu Leu Ser Pro Trp Ala Ala Asp Pro Tyr	
85 90 95	
gat gcc gca cgc ttt gcc ggc gtg ttt ttc gcc gtt gtc gga ctg act	336
Asp Ala Ala Arg Phe Ala Gly Val Phe Phe Ala Val Val Gly Leu Thr	
100 105 110	
tcc tgc ggc ttt gcc ggt ttc aac ttt ttg ggc aga cac cac ggg cgc	384
Ser Cys Gly Phe Ala Gly Phe Asn Phe Leu Gly Arg His His Gly Arg	
115 120 125	
agc gtc gtc ctg att ctc atc ggc tgt atc ggg ctg att ccg acc gta	432
Ser Val Val Leu Ile Leu Ile Gly Cys Ile Gly Leu Ile Pro Thr Val	
130 135 140	
cac ttt ctc aac ccc gct gcc gcc gcc ttt gcc gcc gcc gga ctg gtg	480
His Phe Leu Asn Pro Ala Ala Ala Ala Phe Ala Ala Ala Gly Leu Val	
145 150 155 160	
ctg cac ggt tat tct ttg gct cgc cgg cgc gtg att gcc gcc tct ttt	528
Leu His Gly Tyr Ser Leu Ala Arg Arg Arg Val Ile Ala Ala Ser Phe	
165 170 175	
ctg ctc ggt acg ggt tgg acg ctg atg tcg ttg gca gca gct tat ccg	576
Leu Leu Gly Thr Gly Trp Thr Leu Met Ser Leu Ala Ala Ala Tyr Pro	
180 185 190	
gcg gca ttt gcc ctg atg ctg ccc ctg ccc gtg ctg atg ttt ttc cgt	624
Ala Ala Phe Ala Leu Met Leu Pro Leu Pro Val Leu Met Phe Phe Arg	
195 200 205	
ccg tgg caa agc agg cgt ttg atg ttg acg gca gtc gcc tcg ctt gcc	672
Pro Trp Gln Ser Arg Arg Leu Met Leu Thr Ala Val Ala Ser Leu Ala	
210 215 220	
ttt gcc ctg ccg ctt atg acc gtt tac ccg ctg ctc ttg gca aaa acg	720
Phe Ala Leu Pro Leu Met Thr Val Tyr Pro Leu Leu Leu Ala Lys Thr	
225 230 235 240	
cag ccc gcg ctg ttc gcg caa tgg ctc gac gat cac gtt ttc ggt acg	768
Gln Pro Ala Leu Phe Ala Gln Trp Leu Asp Asp His Val Phe Gly Thr	
245 250 255	
ttc ggc ggc gtg cgg cac att cag acg gca ttc agt ttg ttt tac tat	816
Phe Gly Gly Val Arg His Ile Gln Thr Ala Phe Ser Leu Phe Tyr Tyr	
260 265 270	

ctg aaa aac ctg ctt tgg ttt gca ttg cct gcg ctg ccg ctg gcg gtt	864
Leu Lys Asn Leu Leu Trp Phe Ala Leu Pro Ala Leu Pro Leu Ala Val	
275 280 285	
tgg acg gtt tgc cgc acg cgc ctg ttt tcg acc gac tgg ggg att ttg	912
Trp Thr Val Cys Arg Thr Arg Leu Phe Ser Thr Asp Trp Gly Ile Leu	
290 295 300	
ggc gtc gtc tgg atg ctt gcc gtt ttg gtg ctg ctt gcc gtc aat ccg	960
Gly Val Val Trp Met Leu Ala Val Leu Val Leu Leu Ala Val Asn Pro	
305 310 315 320	
cag cgt ttt cag gat aac ctc gtc tgg ctg ctt ccg ccg ctt gcc ctg	1008
Gln Arg Phe Gln Asp Asn Leu Val Trp Leu Leu Pro Pro Leu Ala Leu	
325 330 335	
ttc ggc gcg gcg caa ctg gac agc ctg aga cgc ggc gcg gcg gcg ttt	1056
Phe Gly Ala Ala Gln Leu Asp Ser Leu Arg Arg Gly Ala Ala Ala Phe	
340 345 350	
gtc aac tgg ttc ggc att atg gcg ttc gga ctg ttt gcc gtg ttc ctg	1104
Val Asn Trp Phe Gly Ile Met Ala Phe Gly Leu Phe Ala Val Phe Leu	
355 360 365	
tgg acg ggc ttt ttc gcc atg aat tac ggc tgg ccc gcc aag ctt gcc	1152
Trp Thr Gly Phe Phe Ala Met Asn Tyr Gly Trp Pro Ala Lys Leu Ala	
370 375 380	
gaa cgc gcc gcc tat ttc agc ccg tat tat gtt cct gat atc gat ccc	1200
Glu Arg Ala Ala Tyr Phe Ser Pro Tyr Tyr Val Pro Asp Ile Asp Pro	
385 390 395 400	
att ccg atg gcg gtt gcc gta ctg ttc aca ccc ttg tgg ctg tgg gcg	1248
Ile Pro Met Ala Val Ala Val Leu Phe Thr Pro Leu Trp Leu Trp Ala	
405 410 415	
att acc cgc aaa aac ata cgc ggc agg cag gcg gtt acc aac tgg gcg	1296
Ile Thr Arg Lys Asn Ile Arg Gly Arg Gln Ala Val Thr Asn Trp Ala	
420 425 430	
gca ggc gtt acc ctg acc tgg gct ttg ctg atg acg ctg ttc ctg ccg	1344
Ala Gly Val Thr Leu Thr Trp Ala Leu Leu Met Thr Leu Phe Leu Pro	
435 440 445	
tgg ctg gac gcg gcg aaa agc cac gcg ccc gtc gtc cgg agt atg gag	1392
Trp Leu Asp Ala Ala Lys Ser His Ala Pro Val Val Arg Ser Met Glu	
450 455 460	

gca tgc ctt tcc ccg gaa tta aaa cgg gag ctt tca gac ggc atc gag 1440  
 Ala Ser Leu Ser Pro Glu Leu Lys Arg Glu Leu Ser Asp Gly Ile Glu  
 465 470 475 480

tgt atc gac ata ggc ggc ggc gac cta cac acg cgg att gtt tgg acg 1488  
 Cys Ile Asp Ile Gly Gly Gly Asp Leu His Thr Arg Ile Val Trp Thr  
 485 490 495

cag tac ggc aca ttg ccg cac cgc gtc ggc gat gta caa tgc cgc tac 1536  
 Gln Tyr Gly Thr Leu Pro His Arg Val Gly Asp Val Gln Cys Arg Tyr  
 500 505 510

cgc atc gtc cgc ttg ccc caa aac gcg gat gcg ccg caa ggc tgg cag 1584  
 Arg Ile Val Arg Leu Pro Gln Asn Ala Asp Ala Pro Gln Gly Trp Gln  
 515 520 525

acg gtc tgg cag ggt gcg cgc ccg cgc aac aaa gac agt aag ttc gca 1632  
 Thr Val Trp Gln Gly Ala Arg Pro Arg Asn Lys Asp Ser Lys Phe Ala  
 530 535 540

ctg ata cgg aaa acc ggg gaa aat ata tta aaa aca aca gat 1674  
 Leu Ile Arg Lys Thr Gly Glu Asn Ile Leu Lys Thr Thr Asp  
 545 550 555

<210> 2

<211> 558

<212> PRT

<213> Neisseria meningitidis

<400> 2

Met Leu Thr Tyr Thr Pro Pro Asp Ala Arg Pro Pro Ala Lys Thr His  
 1 5 10 15

Glu Lys Pro Trp Leu Leu Leu Leu Met Ala Phe Ala Trp Leu Trp Pro  
 20 25 30

Gly Val Phe Ser His Asp Leu Trp Asn Pro Asp Glu Pro Ala Val Tyr  
 35 40 45

Thr Ala Val Glu Ala Leu Ala Gly Ser Pro Thr Pro Leu Val Ala His  
 50 55 60

Leu Phe Gly Gln Ile Asp Phe Gly Ile Pro Pro Val Tyr Leu Trp Val  
 65 70 75 80

Ala Ala Ala Phe Lys His Leu Leu Ser Pro Trp Ala Ala Asp Pro Tyr  
 85 90 95

Asp Ala Ala Arg Phe Ala Gly Val Phe Phe Ala Val Val Gly Leu Thr  
 100 105 110

Ser Cys Gly Phe Ala Gly Phe Asn Phe Leu Gly Arg His His Gly Arg  
 115 120 125

Ser Val Val Leu Ile Leu Ile Gly Cys Ile Gly Leu Ile Pro Thr Val  
 130 135 140

His Phe Leu Asn Pro Ala Ala Ala Ala Phe Ala Ala Ala Gly Leu Val  
 145 150 155 160

Leu His Gly Tyr Ser Leu Ala Arg Arg Arg Val Ile Ala Ala Ser Phe  
 165 170 175

Leu Leu Gly Thr Gly Trp Thr Leu Met Ser Leu Ala Ala Ala Tyr Pro  
 180 185 190

Ala Ala Phe Ala Leu Met Leu Pro Leu Pro Val Leu Met Phe Phe Arg  
 195 200 205

Pro Trp Gln Ser Arg Arg Leu Met Leu Thr Ala Val Ala Ser Leu Ala  
 210 215 220

Phe Ala Leu Pro Leu Met Thr Val Tyr Pro Leu Leu Leu Ala Lys Thr  
 225 230 235 240

Gln Pro Ala Leu Phe Ala Gln Trp Leu Asp Asp His Val Phe Gly Thr  
 245 250 255

Phe Gly Gly Val Arg His Ile Gln Thr Ala Phe Ser Leu Phe Tyr Tyr  
 260 265 270

Leu Lys Asn Leu Leu Trp Phe Ala Leu Pro Ala Leu Pro Leu Ala Val  
 275 280 285

Trp Thr Val Cys Arg Thr Arg Leu Phe Ser Thr Asp Trp Gly Ile Leu  
 290 295 300

Gly Val Val Trp Met Leu Ala Val Leu Val Leu Leu Ala Val Asn Pro  
 305 310 315 320

Gln Arg Phe Gln Asp Asn Leu Val Trp Leu Leu Pro Pro Leu Ala Leu  
 325 330 335

Phe Gly Ala Ala Gln Leu Asp Ser Leu Arg Arg Gly Ala Ala Ala Phe  
 340 345 350

Val Asn Trp Phe Gly Ile Met Ala Phe Gly Leu Phe Ala Val Phe Leu  
 355 360 365  
 Trp Thr Gly Phe Phe Ala Met Asn Tyr Gly Trp Pro Ala Lys Leu Ala  
 370 375 380  
 Glu Arg Ala Ala Tyr Phe Ser Pro Tyr Tyr Val Pro Asp Ile Asp Pro  
 385 390 395 400  
 Ile Pro Met Ala Val Ala Val Leu Phe Thr Pro Leu Trp Leu Trp Ala  
 405 410 415  
 Ile Thr Arg Lys Asn Ile Arg Gly Arg Gln Ala Val Thr Asn Trp Ala  
 420 425 430  
 Ala Gly Val Thr Leu Thr Trp Ala Leu Leu Met Thr Leu Phe Leu Pro  
 435 440 445  
 Trp Leu Asp Ala Ala Lys Ser His Ala Pro Val Val Arg Ser Met Glu  
 450 455 460  
 Ala Ser Leu Ser Pro Glu Leu Lys Arg Glu Leu Ser Asp Gly Ile Glu  
 465 470 475 480  
 Cys Ile Asp Ile Gly Gly Gly Asp Leu His Thr Arg Ile Val Trp Thr  
 485 490 495  
 Gln Tyr Gly Thr Leu Pro His Arg Val Gly Asp Val Gln Cys Arg Tyr  
 500 505 510  
 Arg Ile Val Arg Leu Pro Gln Asn Ala Asp Ala Pro Gln Gly Trp Gln  
 515 520 525  
 Thr Val Trp Gln Gly Ala Arg Pro Arg Asn Lys Asp Ser Lys Phe Ala  
 530 535 540  
 Leu Ile Arg Lys Thr Gly Glu Asn Ile Leu Lys Thr Thr Asp  
 545 550 555

&lt;210&gt; 3

&lt;211&gt; 1077

&lt;212&gt; DNA

&lt;213&gt; Neisseria meningitidis

&lt;220&gt;



&lt;221&gt; CDS

&lt;222&gt; (1)..(1077)

&lt;400&gt; 3

atg aaa aca ctg acc gta cac acc ccg tcc cac agc tac ccc atc ttt	48
Met Lys Thr Leu Thr Val His Thr Pro Ser His Ser Tyr Pro Ile Phe	
1 5 10 15	
atc ggc aac gga ctg ctg ccg cag gca gga agc ctg ctc aaa ccg cat	96
Ile Gly Asn Gly Leu Leu Pro Gln Ala Gly Ser Leu Leu Lys Pro His	
20 25 30	
ttg ggc aaa cgc gcc gcc atc atc acc aac gaa acc gtc gcc ccg ctc	144
Leu Gly Lys Arg Ala Ala Ile Ile Thr Asn Glu Thr Val Ala Pro Leu	
35 40 45	
tac ctc ggc acg ctt cag acg gca ttg gat gcg gca ggc gta tcc cat	192
Tyr Leu Gly Thr Leu Gln Thr Ala Leu Asp Ala Ala Gly Val Ser His	
50 55 60	
ttc agc atc atc ctg ccc gac ggc gag gcg cac aaa aac tgg cag acg	240
Phe Ser Ile Ile Leu Pro Asp Gly Glu Ala His Lys Asn Trp Gln Thr	
65 70 75 80	
ctc aac ctc atc ttt gac ggc ctg atg caa aac cgc gcc gaa cgc aaa	288
Leu Asn Leu Ile Phe Asp Gly Leu Met Gln Asn Arg Ala Glu Arg Lys	
85 90 95	
acc acg ctc atc gca ctg ggc ggc ggc gtg atc ggc gat atg acg ggt	336
Thr Thr Leu Ile Ala Leu Gly Gly Gly Val Ile Gly Asp Met Thr Gly	
100 105 110	
ttt gcg gcg gct act tat caa cgc ggc gcg cca ttt gtt caa att ccc	384
Phe Ala Ala Ala Thr Tyr Gln Arg Gly Ala Pro Phe Val Gln Ile Pro	
115 120 125	
act act tta tta agt cag gtc gat tcc tcc gtc ggc ggc aaa acc gcc	432
Thr Thr Leu Leu Ser Gln Val Asp Ser Ser Val Gly Gly Lys Thr Ala	
130 135 140	
atc aac cac ccg ctc ggc aaa aat atg atc ggc gcg ttc tac cag ccg	480
Ile Asn His Pro Leu Gly Lys Asn Met Ile Gly Ala Phe Tyr Gln Pro	
145 150 155 160	
cag gcg gtg ctt gcc gac ttg gac acg ctg cac acc ctg ccc gcc cgc	528
Gln Ala Val Leu Ala Asp Leu Asp Thr Leu His Thr Leu Pro Ala Arg	
165 170 175	

gaa ctg tcc gcc ggt atg gcg gaa gtc atc aaa tac ggc acg ctc ggc	576
Glu Leu Ser Ala Gly Met Ala Glu Val Ile Lys Tyr Gly Thr Leu Gly	
180 185 190	
gac att agt ttt ttt gaa tgg ctg gaa cag cat atg ccc gaa ctg atg	624
Asp Ile Ser Phe Phe Glu Trp Leu Glu Gln His Met Pro Glu Leu Met	
195 200 205	
gca ctc gaa cgc gcg ccc ctc atc caa gcc gtg tac cgc tgt tgc caa	672
Ala Leu Glu Arg Ala Pro Leu Ile Gln Ala Val Tyr Arg Cys Cys Gln	
210 215 220	
atg aag gca gac atc gtc gcc caa gac gaa acc gaa cag ggc ata cgc	720
Met Lys Ala Asp Ile Val Ala Gln Asp Glu Thr Glu Gln Gly Ile Arg	
225 230 235 240	
gca tgg ctc aac ctc gga cac acc ttc gga cac gcc att gaa acc gag	768
Ala Trp Leu Asn Leu Gly His Thr Phe Gly His Ala Ile Glu Thr Glu	
245 250 255	
atg ggt tac ggt act tgg ctg cac ggc gag gcc gtc gcc gcc ggc tgc	816
Met Gly Tyr Gly Thr Trp Leu His Gly Glu Ala Val Ala Ala Gly Cys	
260 265 270	
gtg ttg gcg gcg cgt ttg tcc gaa caa ctg ggc aaa atc tcc gcc gca	864
Val Leu Ala Ala Arg Leu Ser Glu Gln Leu Gly Lys Ile Ser Ala Ala	
275 280 285	
gat acc gcg cgg ctc gcc gcc ctg ctc gaa gcc gcc gga ctg ccg tcc	912
Asp Thr Ala Arg Leu Ala Ala Leu Leu Glu Ala Ala Gly Leu Pro Ser	
290 295 300	
gcg cca ccc gtg ttt gcc ttt gaa aaa tgg ctg gaa cac atg agc cac	960
Ala Pro Pro Val Phe Ala Phe Glu Lys Trp Leu Glu His Met Ser His	
305 310 315 320	
gat aaa aaa gtc agc ggc ggc atc atg cgc ttt atc ggt ctg aac cgg	1008
Asp Lys Lys Val Ser Gly Gly Ile Met Arg Phe Ile Gly Leu Asn Arg	
325 330 335	
ctg ggc gaa gcc aac atc acc gaa att acc gac acg gac atc ctc cgc	1056
Leu Gly Glu Ala Asn Ile Thr Glu Ile Thr Asp Thr Asp Ile Leu Arg	
340 345 350	
cgc acc ctg caa ccg tat ctc	1077
Arg Thr Leu Gln Pro Tyr Leu	
355	

&lt;210&gt; 4

&lt;211&gt; 359

&lt;212&gt; PRT

&lt;213&gt; Neisseria meningitidis

&lt;400&gt; 4

Met Lys Thr Leu Thr Val His Thr Pro Ser His Ser Tyr Pro Ile Phe  
 1 5 10 15

Ile Gly Asn Gly Leu Leu Pro Gln Ala Gly Ser Leu Leu Lys Pro His  
 20 25 30

Leu Gly Lys Arg Ala Ala Ile Ile Thr Asn Glu Thr Val Ala Pro Leu  
 35 40 45

Tyr Leu Gly Thr Leu Gln Thr Ala Leu Asp Ala Ala Gly Val Ser His  
 50 55 60

Phe Ser Ile Ile Leu Pro Asp Gly Glu Ala His Lys Asn Trp Gln Thr  
 65 70 75 80

Leu Asn Leu Ile Phe Asp Gly Leu Met Gln Asn Arg Ala Glu Arg Lys  
 85 90 95

Thr Thr Leu Ile Ala Leu Gly Gly Gly Val Ile Gly Asp Met Thr Gly  
 100 105 110

Phe Ala Ala Ala Thr Tyr Gln Arg Gly Ala Pro Phe Val Gln Ile Pro  
 115 120 125

Thr Thr Leu Leu Ser Gln Val Asp Ser Ser Val Gly Gly Lys Thr Ala  
 130 135 140

Ile Asn His Pro Leu Gly Lys Asn Met Ile Gly Ala Phe Tyr Gln Pro  
 145 150 155 160

Gln Ala Val Leu Ala Asp Leu Asp Thr Leu His Thr Leu Pro Ala Arg  
 165 170 175

Glu Leu Ser Ala Gly Met Ala Glu Val Ile Lys Tyr Gly Thr Leu Gly  
 180 185 190

Asp Ile Ser Phe Phe Glu Trp Leu Glu Gln His Met Pro Glu Leu Met  
 195 200 205

Ala Leu Glu Arg Ala Pro Leu Ile Gln Ala Val Tyr Arg Cys Cys Gln  
 210 215 220

Met Lys Ala Asp Ile Val Ala Gln Asp Glu Thr Glu Gln Gly Ile Arg  
 225 230 235 240

Ala Trp Leu Asn Leu Gly His Thr Phe Gly His Ala Ile Glu Thr Glu  
 245 250 255

Met Gly Tyr Gly Thr Trp Leu His Gly Glu Ala Val Ala Ala Gly Cys  
 260 265 270

Val Leu Ala Ala Arg Leu Ser Glu Gln Leu Gly Lys Ile Ser Ala Ala  
 275 280 285

Asp Thr Ala Arg Leu Ala Ala Leu Leu Glu Ala Ala Gly Leu Pro Ser  
 290 295 300

Ala Pro Pro Val Phe Ala Phe Glu Lys Trp Leu Glu His Met Ser His  
 305 310 315 320

Asp Lys Lys Val Ser Gly Gly Ile Met Arg Phe Ile Gly Leu Asn Arg  
 325 330 335

Leu Gly Glu Ala Asn Ile Thr Glu Ile Thr Asp Thr Asp Ile Leu Arg  
 340 345 350

Arg Thr Leu Gln Pro Tyr Leu  
 355

<210> 5

<211> 1053

<212> DNA

<213> Neisseria meningitidis

<220>

<221> CDS

<222> (1)..(1053)

<400> 5

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 1 5 10 15

gag ttg ttg ccg ccg att gcc cat ctt tac gag ctg ccg att tcc aaa 96  
 Glu Leu Leu Pro Pro Ile Ala His Leu Tyr Glu Leu Pro Ile Ser Lys  
 20 25 30

gag gct tcg ggc ttg gtt cac cgc acc cgt cag gaa att tcc gat ttg	144
Glu Ala Ser Gly Leu Val His Arg Thr Arg Gln Glu Ile Ser Asp Leu	
35 40 45	
ggt cac ggc agg gac aag cgg ctg ttg gtt att atc ggg ccg tgt tcg	192
Val His Gly Arg Asp Lys Arg Leu Leu Val Ile Ile Gly Pro Cys Ser	
50 55 60	
att cac gat ccg aaa gcg gcg ttg gaa tat gcg gag cgt ttg ttg aaa	240
Ile His Asp Pro Lys Ala Ala Leu Glu Tyr Ala Glu Arg Leu Leu Lys	
65 70 75 80	
ctc cgc aag cag tat gaa aac gag ctt ttg att gtg atg cgc gtt tat	288
Leu Arg Lys Gln Tyr Glu Asn Glu Leu Leu Ile Val Met Arg Val Tyr	
85 90 95	
ttc gag aag ccg agg acg acg gtg ggt tgg aaa ggt ttg att aac gac	336
Phe Glu Lys Pro Arg Thr Thr Val Gly Trp Lys Gly Leu Ile Asn Asp	
100 105 110	
ccg cat ttg gac ggt acg ttt gac atc aat ttc ggt ttg cgt cag gca	384
Pro His Leu Asp Gly Thr Phe Asp Ile Asn Phe Gly Leu Arg Gln Ala	
115 120 125	
cgc agc ctg ttg ttg tcg ctg aac aat atg ggt atg cct gcc tct acc	432
Arg Ser Leu Leu Leu Ser Leu Asn Asn Met Gly Met Pro Ala Ser Thr	
130 135 140	
gag ttt ttg gat atg att acg ccg caa tat tat gcg gac ttg att tct	480
Glu Phe Leu Asp Met Ile Thr Pro Gln Tyr Tyr Ala Asp Leu Ile Ser	
145 150 155 160	
tgg ggg gca atc ggc gcg cgg acg acc gaa agc caa gtt cac cgc gaa	528
Trp Gly Ala Ile Gly Ala Arg Thr Thr Glu Ser Gln Val His Arg Glu	
165 170 175	
ttg gca agc ggg ctg tcc tgc ccc gtc ggc ttt aaa aac ggt acg gat	576
Leu Ala Ser Gly Leu Ser Cys Pro Val Gly Phe Lys Asn Gly Thr Asp	
180 185 190	
ggc aat ttg aag att gcc atc gac gca atc ggt gcg gcg agc cat tcg	624
Gly Asn Leu Lys Ile Ala Ile Asp Ala Ile Gly Ala Ala Ser His Ser	
195 200 205	
cat cat ttc ctg tct gta acc aag gcc ggg cat tcc gcc att gtc cat	672
His His Phe Leu Ser Val Thr Lys Ala Gly His Ser Ala Ile Val His	
210 215 220	

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acc ggc ggc aat cct gac tgt cat gtc att ttg cgc ggc gga aaa gag   720
Thr Gly Gly Asn Pro Asp Cys His Val Ile Leu Arg Gly Gly Lys Glu
225                      230                      235                      240

ccg aat tat gat gcg gga cac gtc agc gag gcg gcg gaa caa ctg cgt   768
Pro Asn Tyr Asp Ala Gly His Val Ser Glu Ala Ala Glu Gln Leu Arg
                      245                      250                      255

gcg gca ggc gta acc gac aag ctg atg att gat tgc agc cac gcc aac   816
Ala Ala Gly Val Thr Asp Lys Leu Met Ile Asp Cys Ser His Ala Asn
                      260                      265                      270

agc cgc aag gat tac acc cga cag atg gaa gtg gcg caa gac att gcc   864
Ser Arg Lys Asp Tyr Thr Arg Gln Met Glu Val Ala Gln Asp Ile Ala
                      275                      280                      285

gcc caa ttg gaa cag gac ggc ggc aat att atg ggc gtg atg gtg gaa   912
Ala Gln Leu Glu Gln Asp Gly Gly Asn Ile Met Gly Val Met Val Glu
                      290                      295                      300

agc cat ttg gtc gaa ggc agg cag gac aag ccg gaa gtg tac ggc aaa   960
Ser His Leu Val Glu Gly Arg Gln Asp Lys Pro Glu Val Tyr Gly Lys
305                      310                      315                      320

agc att acc gat gcg tgt att ggt tgg gac gcg act gaa gaa ctg ttg   1008
Ser Ile Thr Asp Ala Cys Ile Gly Trp Asp Ala Thr Glu Glu Leu Leu
                      325                      330                      335

gca ttg ttg gca ggt gca aac aaa aaa cgt atg gcg cgc gcc ggt      1053
Ala Leu Leu Ala Gly Ala Asn Lys Lys Arg Met Ala Arg Ala Gly
                      340                      345                      350

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&lt;210&gt; 6

&lt;211&gt; 351

&lt;212&gt; PRT

&lt;213&gt; Neisseria meningitidis

&lt;400&gt; 6

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Met Thr His His Tyr Pro Thr Asp Asp Ile Lys Ile Lys Glu Val Lys
  1                      5                      10                      15

Glu Leu Leu Pro Pro Ile Ala His Leu Tyr Glu Leu Pro Ile Ser Lys
                      20                      25                      30

Glu Ala Ser Gly Leu Val His Arg Thr Arg Gln Glu Ile Ser Asp Leu
                      35                      40                      45

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Val His Gly Arg Asp Lys Arg Leu Leu Val Ile Ile Gly Pro Cys Ser  
 50 55 60

Ile His Asp Pro Lys Ala Ala Leu Glu Tyr Ala Glu Arg Leu Leu Lys  
 65 70 75 80

Leu Arg Lys Gln Tyr Glu Asn Glu Leu Leu Ile Val Met Arg Val Tyr  
 85 90 95

Phe Glu Lys Pro Arg Thr Thr Val Gly Trp Lys Gly Leu Ile Asn Asp  
 100 105 110

Pro His Leu Asp Gly Thr Phe Asp Ile Asn Phe Gly Leu Arg Gln Ala  
 115 120 125

Arg Ser Leu Leu Leu Ser Leu Asn Asn Met Gly Met Pro Ala Ser Thr  
 130 135 140

Glu Phe Leu Asp Met Ile Thr Pro Gln Tyr Tyr Ala Asp Leu Ile Ser  
 145 150 155 160

Trp Gly Ala Ile Gly Ala Arg Thr Thr Glu Ser Gln Val His Arg Glu  
 165 170 175

Leu Ala Ser Gly Leu Ser Cys Pro Val Gly Phe Lys Asn Gly Thr Asp  
 180 185 190

Gly Asn Leu Lys Ile Ala Ile Asp Ala Ile Gly Ala Ala Ser His Ser  
 195 200 205

His His Phe Leu Ser Val Thr Lys Ala Gly His Ser Ala Ile Val His  
 210 215 220

Thr Gly Gly Asn Pro Asp Cys His Val Ile Leu Arg Gly Gly Lys Glu  
 225 230 235 240

Pro Asn Tyr Asp Ala Gly His Val Ser Glu Ala Ala Glu Gln Leu Arg  
 245 250 255

Ala Ala Gly Val Thr Asp Lys Leu Met Ile Asp Cys Ser His Ala Asn  
 260 265 270

Ser Arg Lys Asp Tyr Thr Arg Gln Met Glu Val Ala Gln Asp Ile Ala  
 275 280 285

Ala Gln Leu Glu Gln Asp Gly Gly Asn Ile Met Gly Val Met Val Glu  
 290 295 300

Ser His Leu Val Glu Gly Arg Gln Asp Lys Pro Glu Val Tyr Gly Lys  
 305 310 315 320

Ser Ile Thr Asp Ala Cys Ile Gly Trp Asp Ala Thr Glu Glu Leu Leu  
 325 330 335

Ala Leu Leu Ala Gly Ala Asn Lys Lys Arg Met Ala Arg Ala Gly  
 340 345 350

<210> 7

<211> 1686

<212> DNA

<213> Neisseria meningitidis

<220>

<221> CDS

<222> (1)..(1686)

<400> 7

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 Met Leu Gln Ser Glu Asn Ser Lys Asn Leu Ile Ser Cys Ser Ile Lys  
 1 5 10 15

gct tta cca atc atg att tct acc aac ggc atc acc atg cag ttc ggc 96  
 Ala Leu Pro Ile Met Ile Ser Thr Asn Gly Ile Thr Met Gln Phe Gly  
 20 25 30

gcg aag ccg ctg ttt gaa aac gta tcc gtt aaa ttc ggc gaa ggc aac 144  
 Ala Lys Pro Leu Phe Glu Asn Val Ser Val Lys Phe Gly Glu Gly Asn  
 35 40 45

cgc tac ggt ttg atc ggc gcg aac ggc tca ggc aaa tcc acc ttc atg 192  
 Arg Tyr Gly Leu Ile Gly Ala Asn Gly Ser Gly Lys Ser Thr Phe Met  
 50 55 60

aaa atc ctc ggc ggc gat ttg gaa cag aca gcc ggc gaa gtg gcg att 240  
 Lys Ile Leu Gly Gly Asp Leu Glu Gln Thr Ala Gly Glu Val Ala Ile  
 65 70 75 80

gaa aac ggc gtg cgt ttg ggt aaa ttg cgc caa gac cag ttt gcc tac 288  
 Glu Asn Gly Val Arg Leu Gly Lys Leu Arg Gln Asp Gln Phe Ala Tyr  
 85 90 95

gaa gat atg cgc gtg ctg gac gtg gta atg atg ggt cac acc gaa atg 336  
 Glu Asp Met Arg Val Leu Asp Val Val Met Met Gly His Thr Glu Met  
 100 105 110



tgg gcg gcg atg acc gaa cgt gat gcg att tac gcc aat ccc gaa gcc	384
Trp Ala Ala Met Thr Glu Arg Asp Ala Ile Tyr Ala Asn Pro Glu Ala	
115 120 125	
acc gaa gac gac tac atg aaa gcc gca gaa ctg gaa gcc aag ttc gcc	432
Thr Glu Asp Asp Tyr Met Lys Ala Ala Glu Leu Glu Ala Lys Phe Ala	
130 135 140	
gaa tac gac ggc tac acc gcc gaa gcg cgt gcc gcc gag ttg ttg agc	480
Glu Tyr Asp Gly Tyr Thr Ala Glu Ala Arg Ala Ala Glu Leu Leu Ser	
145 150 155 160	
ggc gtg ggc att tcc gaa gat ttg cac aat gca acc atg gca gaa gtt	528
Gly Val Gly Ile Ser Glu Asp Leu His Asn Ala Thr Met Ala Glu Val	
165 170 175	
gcc ccg ggc ttc aaa ctg cgc gta ttg ctg gcg caa gcc ctg ttc tcc	576
Ala Pro Gly Phe Lys Leu Arg Val Leu Leu Ala Gln Ala Leu Phe Ser	
180 185 190	
aag ccg gat gta ttg ctc ttg gac gaa ccg acc aat aac ttg gac att	624
Lys Pro Asp Val Leu Leu Leu Asp Glu Pro Thr Asn Asn Leu Asp Ile	
195 200 205	
aat acc atc cgt tgg ttg gaa ggc gtg ttg aac cag tac gac tcc acg	672
Asn Thr Ile Arg Trp Leu Glu Gly Val Leu Asn Gln Tyr Asp Ser Thr	
210 215 220	
atg att atc atc tcg cac gac cgc cac ttc ttg aac gaa gtc tgc acg	720
Met Ile Ile Ile Ser His Asp Arg His Phe Leu Asn Glu Val Cys Thr	
225 230 235 240	
cat atg gca gat ttg gat tac aac acc atc acc atc tat ccg ggc aac	768
His Met Ala Asp Leu Asp Tyr Asn Thr Ile Thr Ile Tyr Pro Gly Asn	
245 250 255	
tac gac gac tat atg ctc gcc tcc gcc caa tcg cgc gaa cgc gcc ctg	816
Tyr Asp Asp Tyr Met Leu Ala Ser Ala Gln Ser Arg Glu Arg Ala Leu	
260 265 270	
aaa gac aat gcc aag gcg aag gaa aaa ttg cag gaa ttg caa gaa ttt	864
Lys Asp Asn Ala Lys Ala Lys Glu Lys Leu Gln Glu Leu Gln Glu Phe	
275 280 285	
gtg gcg cgg ttc agt gcc aac aaa tcc aaa gcc cgt cag gca acc agc	912
Val Ala Arg Phe Ser Ala Asn Lys Ser Lys Ala Arg Gln Ala Thr Ser	
290 295 300	

cgt ctg aaa cag gca gac aaa atc aaa tcg gag atg gtc gag gtc aaa	960
Arg Leu Lys Gln Ala Asp Lys Ile Lys Ser Glu Met Val Glu Val Lys	
305 310 315 320	
ccc tct acc cgt caa aac ccg tat atc cgt ttt gaa gcc gat gaa aaa	1008
Pro Ser Thr Arg Gln Asn Pro Tyr Ile Arg Phe Glu Ala Asp Glu Lys	
325 330 335	
gcc aag ctg cac cgt cag gct gtg gaa gtt gaa aaa ctg gcg aaa cgc	1056
Ala Lys Leu His Arg Gln Ala Val Glu Val Glu Lys Leu Ala Lys Arg	
340 345 350	
ttt gaa acc cag ttg ttt aaa aac ctg aac ttt atc ctt gaa gcg gga	1104
Phe Glu Thr Gln Leu Phe Lys Asn Leu Asn Phe Ile Leu Glu Ala Gly	
355 360 365	
caa cgc ctc gcc atc atc ggc ccg aac ggc gcg ggc aaa tcc acc ctg	1152
Gln Arg Leu Ala Ile Ile Gly Pro Asn Gly Ala Gly Lys Ser Thr Leu	
370 375 380	
ctg aaa ctc ttg gcc ggc gcg tac aac ccc gaa tat tca gac ggt ctg	1200
Leu Lys Leu Leu Ala Gly Ala Tyr Asn Pro Glu Tyr Ser Asp Gly Leu	
385 390 395 400	
ctg ccg gac gaa ggc agc atc aaa tgg gcg gaa aaa gcc agc gtc ggc	1248
Leu Pro Asp Glu Gly Ser Ile Lys Trp Ala Glu Lys Ala Ser Val Gly	
405 410 415	
tac tat ccg caa gat cac gaa aac gac ttc gat gtc gat atg gat ttg	1296
Tyr Tyr Pro Gln Asp His Glu Asn Asp Phe Asp Val Asp Met Asp Leu	
420 425 430	
agc gaa tgg atg cgc caa tgg ggg cag gac ggc gac gac gaa caa gtc	1344
Ser Glu Trp Met Arg Gln Trp Gly Gln Asp Gly Asp Asp Glu Gln Val	
435 440 445	
atc cgc ggc act ttg ggg cgt ttg ctc ttc ggc agt aac gat gtc gtg	1392
Ile Arg Gly Thr Leu Gly Arg Leu Leu Phe Gly Ser Asn Asp Val Val	
450 455 460	
aaa aaa gtg aag gtt ctc tcc ggt ggt gaa aaa ggc cgt atg ctt tac	1440
Lys Lys Val Lys Val Leu Ser Gly Gly Glu Lys Gly Arg Met Leu Tyr	
465 470 475 480	
ggc aaa ctg ttg ctg ttg aaa ccc aat gtc tta gtc atg gat gaa ccg	1488
Gly Lys Leu Leu Leu Lys Pro Asn Val Leu Val Met Asp Glu Pro	
485 490 495	

acc aac cac atg gac atg gaa agc atc gaa tcc ttg aac atg gcg ctg 1536  
 Thr Asn His Met Asp Met Glu Ser Ile Glu Ser Leu Asn Met Ala Leu  
 500 505 510

gaa aaa tac aac ggc acg ctg att ttc gtc tcc cac gac cgt cag ttc 1584  
 Glu Lys Tyr Asn Gly Thr Leu Ile Phe Val Ser His Asp Arg Gln Phe  
 515 520 525

gtt tct tcc ctg gct acc caa atc att gaa ttg gac ggc aaa ggc gga 1632  
 Val Ser Ser Leu Ala Thr Gln Ile Ile Glu Leu Asp Gly Lys Gly Gly  
 530 535 540

tat gaa cac tac ttg ggc gat tac gaa agc tat ctc gag aaa aaa ggc 1680  
 Tyr Glu His Tyr Leu Gly Asp Tyr Glu Ser Tyr Leu Glu Lys Lys Gly  
 545 550 555 560

gta gca 1686  
 Val Ala

<210> 8

<211> 562

<212> PRT

<213> Neisseria meningitidis

<400> 8

Met Leu Gln Ser Glu Asn Ser Lys Asn Leu Ile Ser Cys Ser Ile Lys  
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Ala Leu Pro Ile Met Ile Ser Thr Asn Gly Ile Thr Met Gln Phe Gly  
 20 25 30

Ala Lys Pro Leu Phe Glu Asn Val Ser Val Lys Phe Gly Glu Gly Asn  
 35 40 45

Arg Tyr Gly Leu Ile Gly Ala Asn Gly Ser Gly Lys Ser Thr Phe Met  
 50 55 60

Lys Ile Leu Gly Gly Asp Leu Glu Gln Thr Ala Gly Glu Val Ala Ile  
 65 70 75 80

Glu Asn Gly Val Arg Leu Gly Lys Leu Arg Gln Asp Gln Phe Ala Tyr  
 85 90 95

Glu Asp Met Arg Val Leu Asp Val Val Met Met Gly His Thr Glu Met  
 100 105 110

Trp Ala Ala Met Thr Glu Arg Asp Ala Ile Tyr Ala Asn Pro Glu Ala  
 115 120 125

Thr Glu Asp Asp Tyr Met Lys Ala Ala Glu Leu Glu Ala Lys Phe Ala  
 130 135 140

Glu Tyr Asp Gly Tyr Thr Ala Glu Ala Arg Ala Ala Glu Leu Leu Ser  
 145 150 155 160

Gly Val Gly Ile Ser Glu Asp Leu His Asn Ala Thr Met Ala Glu Val  
 165 170 175

Ala Pro Gly Phe Lys Leu Arg Val Leu Leu Ala Gln Ala Leu Phe Ser  
 180 185 190

Lys Pro Asp Val Leu Leu Leu Asp Glu Pro Thr Asn Asn Leu Asp Ile  
 195 200 205

Asn Thr Ile Arg Trp Leu Glu Gly Val Leu Asn Gln Tyr Asp Ser Thr  
 210 215 220

Met Ile Ile Ile Ser His Asp Arg His Phe Leu Asn Glu Val Cys Thr  
 225 230 235 240

His Met Ala Asp Leu Asp Tyr Asn Thr Ile Thr Ile Tyr Pro Gly Asn  
 245 250 255

Tyr Asp Asp Tyr Met Leu Ala Ser Ala Gln Ser Arg Glu Arg Ala Leu  
 260 265 270

Lys Asp Asn Ala Lys Ala Lys Glu Lys Leu Gln Glu Leu Gln Glu Phe  
 275 280 285

Val Ala Arg Phe Ser Ala Asn Lys Ser Lys Ala Arg Gln Ala Thr Ser  
 290 295 300

Arg Leu Lys Gln Ala Asp Lys Ile Lys Ser Glu Met Val Glu Val Lys  
 305 310 315 320

Pro Ser Thr Arg Gln Asn Pro Tyr Ile Arg Phe Glu Ala Asp Glu Lys  
 325 330 335

Ala Lys Leu His Arg Gln Ala Val Glu Val Glu Lys Leu Ala Lys Arg  
 340 345 350

Phe Glu Thr Gln Leu Phe Lys Asn Leu Asn Phe Ile Leu Glu Ala Gly  
 355 360 365

Gln Arg Leu Ala Ile Ile Gly Pro Asn Gly Ala Gly Lys Ser Thr Leu  
 370 375 380  
 Leu Lys Leu Leu Ala Gly Ala Tyr Asn Pro Glu Tyr Ser Asp Gly Leu  
 385 390 395 400  
 Leu Pro Asp Glu Gly Ser Ile Lys Trp Ala Glu Lys Ala Ser Val Gly  
 405 410 415  
 Tyr Tyr Pro Gln Asp His Glu Asn Asp Phe Asp Val Asp Met Asp Leu  
 420 425 430  
 Ser Glu Trp Met Arg Gln Trp Gly Gln Asp Gly Asp Asp Glu Gln Val  
 435 440 445  
 Ile Arg Gly Thr Leu Gly Arg Leu Leu Phe Gly Ser Asn Asp Val Val  
 450 455 460  
 Lys Lys Val Lys Val Leu Ser Gly Gly Glu Lys Gly Arg Met Leu Tyr  
 465 470 475 480  
 Gly Lys Leu Leu Leu Leu Lys Pro Asn Val Leu Val Met Asp Glu Pro  
 485 490 495  
 Thr Asn His Met Asp Met Glu Ser Ile Glu Ser Leu Asn Met Ala Leu  
 500 505 510  
 Glu Lys Tyr Asn Gly Thr Leu Ile Phe Val Ser His Asp Arg Gln Phe  
 515 520 525  
 Val Ser Ser Leu Ala Thr Gln Ile Ile Glu Leu Asp Gly Lys Gly Gly  
 530 535 540  
 Tyr Glu His Tyr Leu Gly Asp Tyr Glu Ser Tyr Leu Glu Lys Lys Gly  
 545 550 555 560  
 Val Ala

&lt;210&gt; 9

&lt;211&gt; 1632

&lt;212&gt; DNA

&lt;213&gt; Neisseria meningitidis

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(1632)

&lt;400&gt; 9

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Met Ile Lys Pro Asn Leu Arg Pro Lys Leu Gly Ser Ser Ala Leu Ile	
1 5 10 15	
gcc ttc ctt tcc ctg tat tcc tcg ctg gta ttg aat tac gcc ttt ttt	96
Ala Phe Leu Ser Leu Tyr Ser Ser Leu Val Leu Asn Tyr Ala Phe Phe	
20 25 30	
gcc aaa gtt gtc gag ctt cat cct ttt aac ggc acc ggg gcg gat atc	144
Ala Lys Val Val Glu Leu His Pro Phe Asn Gly Thr Gly Ala Asp Ile	
35 40 45	
ttc ctc tat acg atg ccg gtg gtg ctg ttt ttt tta agt aat ttc gtt	192
Phe Leu Tyr Thr Met Pro Val Val Leu Phe Phe Leu Ser Asn Phe Val	
50 55 60	
ttt cac gtc att gcc ctg cct ttc gtg cat aag gta ttg att ccg ttg	240
Phe His Val Ile Ala Leu Pro Phe Val His Lys Val Leu Ile Pro Leu	
65 70 75 80	
ata ttg gtt atc agt gcg gcg gtg tct tac caa gaa ata ttt ttc aat	288
Ile Leu Val Ile Ser Ala Ala Val Ser Tyr Gln Glu Ile Phe Phe Asn	
85 90 95	
atc tat ttc aac aag tcg atg ttg aat aat gtc ttg caa act acg gct	336
Ile Tyr Phe Asn Lys Ser Met Leu Asn Asn Val Leu Gln Thr Thr Ala	
100 105 110	
gcc gaa agc gcg cgc ctg att acg ccg ggc tat gtg ctg tgg att gta	384
Ala Glu Ser Ala Arg Leu Ile Thr Pro Gly Tyr Val Leu Trp Ile Val	
115 120 125	
tgt ttg ggc gta ttg ccc gcg ctg gcg tat atc gcc gtc aag gtt aaa	432
Cys Ile Gly Val Leu Pro Ala Leu Ala Tyr Ile Ala Val Lys Val Lys	
130 135 140	
tac cgc gtt tgg tat aag gag ctt ttg acg cgc ctt gtg ctt gcc gcc	480
Tyr Arg Val Trp Tyr Lys Glu Leu Leu Thr Arg Leu Val Leu Ala Ala	
145 150 155 160	
gtt tcc ttt ttg tgc gcg ttg ggc atc gca atg ttg caa tat cag gat	528
Val Ser Phe Leu Cys Ala Leu Gly Ile Ala Met Leu Gln Tyr Gln Asp	
165 170 175	
tac gcc tcg ttt ttc cgc aac aat aaa tca gta acc cat ctg att gtg	576

Tyr	Ala	Ser	Phe	Phe	Arg	Asn	Asn	Lys	Ser	Val	Thr	His	Leu	Ile	Val		
			180					185					190				
cca	tct	aat	ttc	atc	ggc	gcg	ggc	gtg	tcg	aaa	tac	aaa	gat	tgg	aag	624	
Pro	Ser	Asn	Phe	Ile	Gly	Ala	Gly	Val	Ser	Lys	Tyr	Lys	Asp	Trp	Lys		
			195				200					205					
cgt	tcc	aat	att	cct	tat	acg	caa	ttg	gat	atg	gcg	gtc	gtg	caa	aac	672	
Arg	Ser	Asn	Ile	Pro	Tyr	Thr	Gln	Leu	Asp	Met	Ala	Val	Val	Gln	Asn		
			210				215				220						
cgc	ccg	gcc	ggc	agc	ctg	cgc	cgt	ttc	gtg	gtg	ctg	gtc	gtg	ggc	gag	720	
Arg	Pro	Ala	Gly	Ser	Leu	Arg	Arg	Phe	Val	Val	Leu	Val	Val	Gly	Glu		
225					230					235					240		
acc	acg	cgt	gcc	gcc	aac	tgg	ggt	ttg	aac	ggt	tac	agc	cgc	caa	act	768	
Thr	Thr	Arg	Ala	Ala	Asn	Trp	Gly	Leu	Asn	Gly	Tyr	Ser	Arg	Gln	Thr		
			245					250						255			
acg	ccg	ctg	ctt	gcc	gcg	cgc	ggc	gat	gaa	att	gtc	aat	ttc	ccg	cag	816	
Thr	Pro	Leu	Leu	Ala	Ala	Arg	Gly	Asp	Glu	Ile	Val	Asn	Phe	Pro	Gln		
			260					265					270				
gtc	aga	agc	tgc	ggt	aca	tcg	acc	gcg	cac	tcc	ctg	ccg	tgt	atg	ttc	864	
Val	Arg	Ser	Cys	Gly	Thr	Ser	Thr	Ala	His	Ser	Leu	Pro	Cys	Met	Phe		
			275					280				285					
tca	acc	ttc	gac	cgc	acg	gat	tat	gac	gaa	atc	aaa	gcc	gaa	cac	caa	912	
Ser	Thr	Phe	Asp	Arg	Thr	Asp	Tyr	Asp	Glu	Ile	Lys	Ala	Glu	His	Gln		
			290				295				300						
gac	aac	ctg	ctg	gac	atc	gtg	cag	cgc	gcc	ggc	gtg	gaa	gtt	acc	tgg	960	
Asp	Asn	Leu	Leu	Asp	Ile	Val	Gln	Arg	Ala	Gly	Val	Glu	Val	Thr	Trp		
305					310					315					320		
ttg	gaa	aac	gat	tcc	ggc	tgc	aag	ggc	gtg	tgc	ggc	aaa	gtg	ccg	aat	1008	
Leu	Glu	Asn	Asp	Ser	Gly	Cys	Lys	Gly	Val	Cys	Gly	Lys	Val	Pro	Asn		
				325					330					335			
acc	gac	gtt	acc	tcg	ctc	aac	ctg	ccc	gaa	tac	tgc	cgc	aac	ggc	gag	1056	
Thr	Asp	Val	Thr	Ser	Leu	Asn	Leu	Pro	Glu	Tyr	Cys	Arg	Asn	Gly	Glu		
			340					345					350				
tgc	ctc	gac	aat	atc	ctg	ctg	acc	aag	ttc	gac	gaa	gtc	ctc	aac	aaa	1104	
Cys	Leu	Asp	Asn	Ile	Leu	Leu	Thr	Lys	Phe	Asp	Glu	Val	Leu	Asn	Lys		
			355					360					365				
aac	gat	aaa	gac	gcg	gtt	tta	atc	ctg	cat	acc	atc	ggc	agc	cac	ggg	1152	

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Asn Asp Lys Asp Ala Val Leu Ile Leu His Thr Ile Gly Ser His Gly
  370                               375                               380

ccg acg tat tac gaa cgc tat acc gaa gcc gaa cgc aaa ttc acg ccg   1200
Pro Thr Tyr Tyr Glu Arg Tyr Thr Glu Ala Glu Arg Lys Phe Thr Pro
385                               390                               395                               400

acc tgc gac acc aac gaa atc aac aaa tgc acc cgc gcc acg ctg gtc   1248
Thr Cys Asp Thr Asn Glu Ile Asn Lys Cys Thr Arg Ala Thr Leu Val
                               405                               410                               415

aac act tac gac aat acg gtt ttg tat gtg gac cag ttt atc gac aag   1296
Asn Thr Tyr Asp Asn Thr Val Leu Tyr Val Asp Gln Phe Ile Asp Lys
                               420                               425                               430

gtt atc cgc aaa ctt gaa aac cgc gac gat ttg gaa agc gtg gtg cat   1344
Val Ile Arg Lys Leu Glu Asn Arg Asp Asp Leu Glu Ser Val Val His
                               435                               440                               445

tat gtt tcc gac cac ggc gaa agt ttg ggc gaa aac ggg atg tac ctg   1392
Tyr Val Ser Asp His Gly Glu Ser Leu Gly Glu Asn Gly Met Tyr Leu
                               450                               455                               460

cac gcc gcg cct tac gcc atc gcg cct tcc ggg cag acg cat atc ccg   1440
His Ala Ala Pro Tyr Ala Ile Ala Pro Ser Gly Gln Thr His Ile Pro
465                               470                               475                               480

atg gtt atg tgg ttt tcc aaa gcc ttc cgc caa cac ggg ggc ata gat   1488
Met Val Met Trp Phe Ser Lys Ala Phe Arg Gln His Gly Gly Ile Asp
                               485                               490                               495

ttc caa tgc ctc aaa caa aaa gcg gcg gaa aac gaa tat tcg cac gac   1536
Phe Gln Cys Leu Lys Gln Lys Ala Ala Glu Asn Glu Tyr Ser His Asp
                               500                               505                               510

cac tat ttc agc acg gta ttg ggg ctg atg gac att tcc aac agc caa   1584
His Tyr Phe Ser Thr Val Leu Gly Leu Met Asp Ile Ser Asn Ser Gln
                               515                               520                               525

acc tat cgg aag gaa atg gat ata ttg gca gcc tgc cgc cgt ccg cgc   1632
Thr Tyr Arg Lys Glu Met Asp Ile Leu Ala Ala Cys Arg Arg Pro Arg
                               530                               535                               540

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&lt;210&gt; 10

&lt;211&gt; 544

&lt;212&gt; PRT

&lt;213&gt; Neisseria meningitidis



&lt;400&gt; 10

Met Ile Lys Pro Asn Leu Arg Pro Lys Leu Gly Ser Ser Ala Leu Ile  
 1 5 10 15

Ala Phe Leu Ser Leu Tyr Ser Ser Leu Val Leu Asn Tyr Ala Phe Phe  
 20 25 30

Ala Lys Val Val Glu Leu His Pro Phe Asn Gly Thr Gly Ala Asp Ile  
 35 40 45

Phe Leu Tyr Thr Met Pro Val Val Leu Phe Phe Leu Ser Asn Phe Val  
 50 55 60

Phe His Val Ile Ala Leu Pro Phe Val His Lys Val Leu Ile Pro Leu  
 65 70 75 80

Ile Leu Val Ile Ser Ala Ala Val Ser Tyr Gln Glu Ile Phe Phe Asn  
 85 90 95

Ile Tyr Phe Asn Lys Ser Met Leu Asn Asn Val Leu Gln Thr Thr Ala  
 100 105 110

Ala Glu Ser Ala Arg Leu Ile Thr Pro Gly Tyr Val Leu Trp Ile Val  
 115 120 125

Cys Leu Gly Val Leu Pro Ala Leu Ala Tyr Ile Ala Val Lys Val Lys  
 130 135 140

Tyr Arg Val Trp Tyr Lys Glu Leu Leu Thr Arg Leu Val Leu Ala Ala  
 145 150 155 160

Val Ser Phe Leu Cys Ala Leu Gly Ile Ala Met Leu Gln Tyr Gln Asp  
 165 170 175

Tyr Ala Ser Phe Phe Arg Asn Asn Lys Ser Val Thr His Leu Ile Val  
 180 185 190

Pro Ser Asn Phe Ile Gly Ala Gly Val Ser Lys Tyr Lys Asp Trp Lys  
 195 200 205

Arg Ser Asn Ile Pro Tyr Thr Gln Leu Asp Met Ala Val Val Gln Asn  
 210 215 220

Arg Pro Ala Gly Ser Leu Arg Arg Phe Val Val Leu Val Val Gly Glu  
 225 230 235 240

Thr Thr Arg Ala Ala Asn Trp Gly Leu Asn Gly Tyr Ser Arg Gln Thr

					245					250					255
Thr	Pro	Leu	Leu	Ala	Ala	Arg	Gly	Asp	Glu	Ile	Val	Asn	Phe	Pro	Gln
			260					265					270		
Val	Arg	Ser	Cys	Gly	Thr	Ser	Thr	Ala	His	Ser	Leu	Pro	Cys	Met	Phe
		275					280					285			
Ser	Thr	Phe	Asp	Arg	Thr	Asp	Tyr	Asp	Glu	Ile	Lys	Ala	Glu	His	Gln
	290					295					300				
Asp	Asn	Leu	Leu	Asp	Ile	Val	Gln	Arg	Ala	Gly	Val	Glu	Val	Thr	Trp
305					310					315					320
Leu	Glu	Asn	Asp	Ser	Gly	Cys	Lys	Gly	Val	Cys	Gly	Lys	Val	Pro	Asn
				325					330					335	
Thr	Asp	Val	Thr	Ser	Leu	Asn	Leu	Pro	Glu	Tyr	Cys	Arg	Asn	Gly	Glu
			340					345					350		
Cys	Leu	Asp	Asn	Ile	Leu	Leu	Thr	Lys	Phe	Asp	Glu	Val	Leu	Asn	Lys
		355					360					365			
Asn	Asp	Lys	Asp	Ala	Val	Leu	Ile	Leu	His	Thr	Ile	Gly	Ser	His	Gly
	370					375						380			
Pro	Thr	Tyr	Tyr	Glu	Arg	Tyr	Thr	Glu	Ala	Glu	Arg	Lys	Phe	Thr	Pro
385					390					395					400
Thr	Cys	Asp	Thr	Asn	Glu	Ile	Asn	Lys	Cys	Thr	Arg	Ala	Thr	Leu	Val
				405					410					415	
Asn	Thr	Tyr	Asp	Asn	Thr	Val	Leu	Tyr	Val	Asp	Gln	Phe	Ile	Asp	Lys
			420					425					430		
Val	Ile	Arg	Lys	Leu	Glu	Asn	Arg	Asp	Asp	Leu	Glu	Ser	Val	Val	His
		435					440					445			
Tyr	Val	Ser	Asp	His	Gly	Glu	Ser	Leu	Gly	Glu	Asn	Gly	Met	Tyr	Leu
	450					455						460			
His	Ala	Ala	Pro	Tyr	Ala	Ile	Ala	Pro	Ser	Gly	Gln	Thr	His	Ile	Pro
465					470					475					480
Met	Val	Met	Trp	Phe	Ser	Lys	Ala	Phe	Arg	Gln	His	Gly	Gly	Ile	Asp
				485					490					495	
Phe	Gln	Cys	Leu	Lys	Gln	Lys	Ala	Ala	Glu	Asn	Glu	Tyr	Ser	His	Asp

500					505					510					
His	Tyr	Phe	Ser	Thr	Val	Leu	Gly	Leu	Met	Asp	Ile	Ser	Asn	Ser	Gln
515					520					525					
Thr	Tyr	Arg	Lys	Glu	Met	Asp	Ile	Leu	Ala	Ala	Cys	Arg	Arg	Pro	Arg
530					535					540					

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<210> 11
<211> 1052
<212> DNA
<213> Neisseria meningitidis
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<220>  
<221> CDS  
<222> (1)..(1050)
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atg	aca	cac	cat	tac	ccc	aca	gac	gat	att	aag	att	aaa	gaa	gtt	aaa	48
Met	Thr	His	His	Tyr	Pro	Thr	Asp	Asp	Ile	Lys	Ile	Lys	Glu	Val	Lys	
1				5				10						15		
gag	ttg	ttg	ccg	ccg	att	gcc	cat	ctt	tac	gag	ctg	ccg	att	tcc	aaa	96
Glu	Leu	Leu	Pro	Pro	Ile	Ala	His	Leu	Tyr	Glu	Leu	Pro	Ile	Ser	Lys	
		20						25						30		
gag	gct	tcg	ggc	ttg	gtt	cac	cgc	acc	cgt	cag	gaa	att	tcc	gat	ttg	144
Glu	Ala	Ser	Gly	Leu	Val	His	Arg	Thr	Arg	Gln	Glu	Ile	Ser	Asp	Leu	
		35						40						45		
gtt	cac	ggc	agg	gac	aag	cgg	ctg	ttg	gtt	att	atc	ggg	ccg	tgt	tcg	192
Val	His	Gly	Arg	Asp	Lys	Arg	Leu	Leu	Val	Ile	Ile	Gly	Pro	Cys	Ser	
50						55						60				
att	cac	gat	ccg	aaa	gcg	gcg	ttg	gaa	tat	gcg	gag	cgt	ttg	ttg	aaa	240
Ile	His	Asp	Pro	Lys	Ala	Ala	Leu	Glu	Tyr	Ala	Glu	Arg	Leu	Leu	Lys	
65						70				75				80		
ctc	cgc	aag	cag	tat	gaa	aac	gag	ctt	ttg	att	gtg	atg	cgc	gtt	tat	288
Leu	Arg	Lys	Gln	Tyr	Glu	Asn	Glu	Leu	Leu	Ile	Val	Met	Arg	Val	Tyr	
				85				90						95		
ttc	gag	aag	ccg	agg	acg	acg	gtg	ggt	tgg	aaa	ggt	ttg	att	aac	gac	336
Phe	Glu	Lys	Pro	Arg	Thr	Thr	Val	Gly	Trp	Lys	Gly	Leu	Ile	Asn	Asp	
		100						105						110		

ccg cat ttg gac ggt acg ttt gac atc aat ttc ggt ttg cgt cag gca	384
Pro His Leu Asp Gly Thr Phe Asp Ile Asn Phe Gly Leu Arg Gln Ala	
115 120 125	
cgc agc ctg ttg ttg tgc ctg aac aat atg ggt atg cct gcc tct acc	432
Arg Ser Leu Leu Leu Ser Leu Asn Asn Met Gly Met Pro Ala Ser Thr	
130 135 140	
gag ttt ttg gat atg att acg ccg caa tat tat gcg gac ttg att tct	480
Glu Phe Leu Asp Met Ile Thr Pro Gln Tyr Tyr Ala Asp Leu Ile Ser	
145 150 155 160	
tgg ggg gca atc ggc gcg cgg acg acc gaa agc caa gtt cac cgc gaa	528
Trp Gly Ala Ile Gly Ala Arg Thr Thr Glu Ser Gln Val His Arg Glu	
165 170 175	
ttg gca agc ggg ctg tcc tgc ccc gtc ggc ttt aaa aac ggt acg gat	576
Leu Ala Ser Gly Leu Ser Cys Pro Val Gly Phe Lys Asn Gly Thr Asp	
180 185 190	
ggc aat ttg aag att gcc atc gac gca atc ggt gcg gcg agc cat tcg	624
Gly Asn Leu Lys Ile Ala Ile Asp Ala Ile Gly Ala Ala Ser His Ser	
195 200 205	
cat cat ttc ctg tct gta acc aag gcc ggg cat tcc gcc att gtc cat	672
His His Phe Leu Ser Val Thr Lys Ala Gly His Ser Ala Ile Val His	
210 215 220	
acc ggc ggc aat cct gac tgt cat gtc att ttg cgc ggc gga aaa gag	720
Thr Gly Gly Asn Pro Asp Cys His Val Ile Leu Arg Gly Gly Lys Glu	
225 230 235 240	
ccg aat tat gat gcg gga cac gtc agc gag gcg gcg gaa caa ctg cgt	768
Pro Asn Tyr Asp Ala Gly His Val Ser Glu Ala Ala Glu Gln Leu Arg	
245 250 255	
gcg gca ggc gta acc gac aag ctg atg att gat tgc agc cac gcc aac	816
Ala Ala Gly Val Thr Asp Lys Leu Met Ile Asp Cys Ser His Ala Asn	
260 265 270	
agc cgc aag gat tac acc cga cag atg gaa gtg gcg caa gac att gcc	864
Ser Arg Lys Asp Tyr Thr Arg Gln Met Glu Val Ala Gln Asp Ile Ala	
275 280 285	
gcc caa ttg gaa cag gac ggc ggc aat att atg ggc gtg atg gtg gaa	912
Ala Gln Leu Glu Gln Asp Gly Gly Asn Ile Met Gly Val Met Val Glu	
290 295 300	

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agc cat ttg gtc gaa ggc agg cag gac aag ccg gaa gtg tac ggc aaa 960
Ser His Leu Val Glu Gly Arg Gln Asp Lys Pro Glu Val Tyr Gly Lys
305          310          315          320

agc att acc gat gcg tgt att ggt tgg gac gcg act gaa gaa ctg ttg 1008
Ser Ile Thr Asp Ala Cys Ile Gly Trp Asp Ala Thr Glu Glu Leu Leu
          325          330          335

gca ttg ttg gca ggt gca aac aaa aaa cgt atg gcg cgc gcc gg 1052
Ala Leu Leu Ala Gly Ala Asn Lys Lys Arg Met Ala Arg Ala
          340          345          350

<210> 12
<211> 350
<212> PRT
<213> Neisseria meningitidis

<400> 12
Met Thr His His Tyr Pro Thr Asp Asp Ile Lys Ile Lys Glu Val Lys
  1          5          10          15

Glu Leu Leu Pro Pro Ile Ala His Leu Tyr Glu Leu Pro Ile Ser Lys
          20          25          30

Glu Ala Ser Gly Leu Val His Arg Thr Arg Gln Glu Ile Ser Asp Leu
          35          40          45

Val His Gly Arg Asp Lys Arg Leu Leu Val Ile Ile Gly Pro Cys Ser
          50          55          60

Ile His Asp Pro Lys Ala Ala Leu Glu Tyr Ala Glu Arg Leu Leu Lys
          65          70          75          80

Leu Arg Lys Gln Tyr Glu Asn Glu Leu Leu Ile Val Met Arg Val Tyr
          85          90          95

Phe Glu Lys Pro Arg Thr Thr Val Gly Trp Lys Gly Leu Ile Asn Asp
          100          105          110

Pro His Leu Asp Gly Thr Phe Asp Ile Asn Phe Gly Leu Arg Gln Ala
          115          120          125

Arg Ser Leu Leu Leu Ser Leu Asn Asn Met Gly Met Pro Ala Ser Thr
          130          135          140

Glu Phe Leu Asp Met Ile Thr Pro Gln Tyr Tyr Ala Asp Leu Ile Ser
          145          150          155          160

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Trp Gly Ala Ile Gly Ala Arg Thr Thr Glu Ser Gln Val His Arg Glu
      165                      170                      175

Leu Ala Ser Gly Leu Ser Cys Pro Val Gly Phe Lys Asn Gly Thr Asp
      180                      185                      190

Gly Asn Leu Lys Ile Ala Ile Asp Ala Ile Gly Ala Ala Ser His Ser
      195                      200                      205

His His Phe Leu Ser Val Thr Lys Ala Gly His Ser Ala Ile Val His
      210                      215                      220

Thr Gly Gly Asn Pro Asp Cys His Val Ile Leu Arg Gly Gly Lys Glu
      225                      230                      235                      240

Pro Asn Tyr Asp Ala Gly His Val Ser Glu Ala Ala Glu Gln Leu Arg
      245                      250                      255

Ala Ala Gly Val Thr Asp Lys Leu Met Ile Asp Cys Ser His Ala Asn
      260                      265                      270

Ser Arg Lys Asp Tyr Thr Arg Gln Met Glu Val Ala Gln Asp Ile Ala
      275                      280                      285

Ala Gln Leu Glu Gln Asp Gly Gly Asn Ile Met Gly Val Met Val Glu
      290                      295                      300

Ser His Leu Val Glu Gly Arg Gln Asp Lys Pro Glu Val Tyr Gly Lys
      305                      310                      315                      320

Ser Ile Thr Asp Ala Cys Ile Gly Trp Asp Ala Thr Glu Glu Leu Leu
      325                      330                      335

Ala Leu Leu Ala Gly Ala Asn Lys Lys Arg Met Ala Arg Ala
      340                      345                      350

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&lt;210&gt; 13

&lt;211&gt; 432

&lt;212&gt; DNA

&lt;213&gt; Neisseria meningitidis

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(432)

&lt;400&gt; 13

atg gca ttt ggt tgc atg aat tcc ggc gac gat tct ccg atg tcc gac 48  
 Met Ala Phe Gly Ser Met Asn Ser Gly Asp Asp Ser Pro Met Ser Asp  
 1 5 10 15

atc aac gtt acg ccg ttg gtg gac gtg atg ctg gtg ttg ctg att gtg 96  
 Ile Asn Val Thr Pro Leu Val Asp Val Met Leu Val Leu Leu Ile Val  
 20 25 30

ttt atg att act atg ccg gtg ctg acg cat tcc atc cct ttg gaa ctg 144  
 Phe Met Ile Thr Met Pro Val Leu Thr His Ser Ile Pro Leu Glu Leu  
 35 40 45

ccg acc gcg tcc gag cag aca aac aag cag gac aaa cag cct aaa gac 192  
 Pro Thr Ala Ser Glu Gln Thr Asn Lys Gln Asp Lys Gln Pro Lys Asp  
 50 55 60

ccc ctg cgc ctg acg att gat gcg aac ggc ggc tat tat gtc ggc ggc 240  
 Pro Leu Arg Leu Thr Ile Asp Ala Asn Gly Gly Tyr Tyr Val Gly Gly  
 65 70 75 80

gat tct gca agc aaa gtg gaa atc ggg gaa gtg gaa agc cgt ctg aaa 288  
 Asp Ser Ala Ser Lys Val Glu Ile Gly Glu Val Glu Ser Arg Leu Lys  
 85 90 95

gcc gcc aag gag cag aat gaa aac gtg att gtg gcg att gcg gca gac 336  
 Ala Ala Lys Glu Gln Asn Glu Asn Val Ile Val Ala Ile Ala Ala Asp  
 100 105 110

aag gcg gtg gaa tac gat tat gta aac aaa gct tta gaa gcc gcc cgt 384  
 Lys Ala Val Glu Tyr Asp Tyr Val Asn Lys Ala Leu Glu Ala Ala Arg  
 115 120 125

cag gca gga atc acc aaa atc ggt ttt gta acc gaa acc aag gcg caa 432  
 Gln Ala Gly Ile Thr Lys Ile Gly Phe Val Thr Glu Thr Lys Ala Gln  
 130 135 140

&lt;210&gt; 14

&lt;211&gt; 144

&lt;212&gt; PRT

<213> *Neisseria meningitidis*

&lt;400&gt; 14

Met Ala Phe Gly Ser Met Asn Ser Gly Asp Asp Ser Pro Met Ser Asp  
 1 5 10 15

Ile Asn Val Thr Pro Leu Val Asp Val Met Leu Val Leu Leu Ile Val

	20		25		30
Phe Met Ile Thr Met Pro Val Leu Thr His Ser Ile Pro Leu Glu Leu					
	35		40		45
Pro Thr Ala Ser Glu Gln Thr Asn Lys Gln Asp Lys Gln Pro Lys Asp					
	50		55		60
Pro Leu Arg Leu Thr Ile Asp Ala Asn Gly Gly Tyr Tyr Val Gly Gly					
	65		70		75
					80
Asp Ser Ala Ser Lys Val Glu Ile Gly Glu Val Glu Ser Arg Leu Lys					
		85		90	
					95
Ala Ala Lys Glu Gln Asn Glu Asn Val Ile Val Ala Ile Ala Ala Asp					
	100		105		110
Lys Ala Val Glu Tyr Asp Tyr Val Asn Lys Ala Leu Glu Ala Ala Arg					
	115		120		125
Gln Ala Gly Ile Thr Lys Ile Gly Phe Val Thr Glu Thr Lys Ala Gln					
	130		135		140

&lt;210&gt; 15

&lt;211&gt; 267

&lt;212&gt; DNA

&lt;213&gt; Neisseria meningitidis

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(267)

&lt;400&gt; 15

atg ctc aaa caa tcc atc gaa atc atc aac aaa ctc gga ctc cac gcc	48
Met Leu Lys Gln Ser Ile Glu Ile Ile Asn Lys Leu Gly Leu His Ala	
1 5 10 15	

cgc gcg tcc aac aag ttc acc caa acc gcg tcc caa ttc aaa agc gaa	96
Arg Ala Ser Asn Lys Phe Thr Gln Thr Ala Ser Gln Phe Lys Ser Glu	
20 25 30	

gtc tgg gtt acg aaa aac gac agc cgc gtc aac ggc aaa agc att atg	144
Val Trp Val Thr Lys Asn Asp Ser Arg Val Asn Gly Lys Ser Ile Met	
35 40 45	

ggg ctg atg atg ctc gcc gcc gcc aag ggt acg gtc atc gaa ctg gag	192
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Gly Leu Met Met Leu Ala Ala Ala Lys Gly Thr Val Ile Glu Leu Glu  
 50 55 60

acg gac ggc gcg gac gag gcg gaa gcg atg cgc gcc ctg acc gac tta 240  
 Thr Asp Gly Ala Asp Glu Ala Glu Ala Met Arg Ala Leu Thr Asp Leu  
 65 70 75 80

atc aac ggc tac ttc ggc gag ggc gaa 267  
 Ile Asn Gly Tyr Phe Gly Glu Gly Glu  
 85

<210> 16  
 <211> 89  
 <212> PRT  
 <213> Neisseria meningitidis

<400> 16  
 Met Leu Lys Gln Ser Ile Glu Ile Ile Asn Lys Leu Gly Leu His Ala  
 1 5 10 15

Arg Ala Ser Asn Lys Phe Thr Gln Thr Ala Ser Gln Phe Lys Ser Glu  
 20 25 30

Val Trp Val Thr Lys Asn Asp Ser Arg Val Asn Gly Lys Ser Ile Met  
 35 40 45

Gly Leu Met Met Leu Ala Ala Ala Lys Gly Thr Val Ile Glu Leu Glu  
 50 55 60

Thr Asp Gly Ala Asp Glu Ala Glu Ala Met Arg Ala Leu Thr Asp Leu  
 65 70 75 80

Ile Asn Gly Tyr Phe Gly Glu Gly Glu  
 85

<210> 17  
 <211> 633  
 <212> DNA  
 <213> Neisseria meningitidis

<220>  
 <221> CDS  
 <222> (1)..(633)

<400> 17

atg ccc atg aac ctt ttt caa aac gcc aaa ttc ttc acg acg gta aac	48
Met Pro Met Asn Leu Phe Gln Asn Ala Lys Phe Phe Thr Thr Val Asn	
1 5 10 15	
cat ctc aaa gac ctg ccg gac aca ccg ctc gaa att gcc ttt gtc ggc	96
His Leu Lys Asp Leu Pro Asp Thr Pro Leu Glu Ile Ala Phe Val Gly	
20 25 30	
agg agc aat gcc gga aaa tcc agt gcc atc aat acc ctg acc aac cat	144
Arg Ser Asn Ala Gly Lys Ser Ser Ala Ile Asn Thr Leu Thr Asn His	
35 40 45	
gtc cgt ctt gcc tac gtt tca aaa aca ccc gga cgg acg cag cat atc	192
Val Arg Leu Ala Tyr Val Ser Lys Thr Pro Gly Arg Thr Gln His Ile	
50 55 60	
aac ttc ttc gag ctg cag aac ggc aat ttt atg gtc gat ttg ccc ggc	240
Asn Phe Phe Glu Leu Gln Asn Gly Asn Phe Met Val Asp Leu Pro Gly	
65 70 75 80	
tac ggt tat gcc caa gtc ccc gaa gca gta cgc gca cat tgg gtc aat	288
Tyr Gly Tyr Ala Gln Val Pro Glu Ala Val Arg Ala His Trp Val Asn	
85 90 95	
ctg ctc ggc gac tat ctg caa cag cgc aaa cag ctt atc ggg ctg gtt	336
Leu Leu Gly Asp Tyr Leu Gln Gln Arg Lys Gln Leu Ile Gly Leu Val	
100 105 110	
ttg att atg gat gcc cgc cat cct tta aaa gaa ctc gac atc cgt atg	384
Leu Ile Met Asp Ala Arg His Pro Leu Lys Glu Leu Asp Ile Arg Met	
115 120 125	
ctg gac ttt ttc cac acg acc ggc aga ccg gtt cac atc ctg ctg tca	432
Leu Asp Phe Phe His Thr Thr Gly Arg Pro Val His Ile Leu Leu Ser	
130 135 140	
aaa gcc gac aaa tta tcc aaa aac gaa cag ata aaa acc ctg tcc caa	480
Lys Ala Asp Lys Leu Ser Lys Asn Glu Gln Ile Lys Thr Leu Ser Gln	
145 150 155 160	
gtc aaa aaa ctg ctc aaa cct tat tcc gac agg caa aac atc agc gta	528
Val Lys Lys Leu Leu Lys Pro Tyr Ser Asp Arg Gln Asn Ile Ser Val	
165 170 175	
cag ctg ttt tcc agc ctg aaa aaa caa ggt att gac gag gcc aac cga	576
Gln Leu Phe Ser Ser Leu Lys Lys Gln Gly Ile Asp Glu Ala Asn Arg	
180 185 190	

act gtc gga agc tgg ttt gac gca gca gat gcc gcc gct tcc tct cca 624  
 Thr Val Gly Ser Trp Phe Asp Ala Ala Asp Ala Ala Ala Ser Ser Pro  
 195 200 205

aag gaa aac 633  
 Lys Glu Asn  
 210

<210> 18

<211> 211

<212> PRT

<213> Neisseria meningitidis

<400> 18

Met Pro Met Asn Leu Phe Gln Asn Ala Lys Phe Phe Thr Thr Val Asn  
 1 5 10 15

His Leu Lys Asp Leu Pro Asp Thr Pro Leu Glu Ile Ala Phe Val Gly  
 20 25 30

Arg Ser Asn Ala Gly Lys Ser Ser Ala Ile Asn Thr Leu Thr Asn His  
 35 40 45

Val Arg Leu Ala Tyr Val Ser Lys Thr Pro Gly Arg Thr Gln His Ile  
 50 55 60

Asn Phe Phe Glu Leu Gln Asn Gly Asn Phe Met Val Asp Leu Pro Gly  
 65 70 75 80

Tyr Gly Tyr Ala Gln Val Pro Glu Ala Val Arg Ala His Trp Val Asn  
 85 90 95

Leu Leu Gly Asp Tyr Leu Gln Gln Arg Lys Gln Leu Ile Gly Leu Val  
 100 105 110

Leu Ile Met Asp Ala Arg His Pro Leu Lys Glu Leu Asp Ile Arg Met  
 115 120 125

Leu Asp Phe Phe His Thr Thr Gly Arg Pro Val His Ile Leu Leu Ser  
 130 135 140

Lys Ala Asp Lys Leu Ser Lys Asn Glu Gln Ile Lys Thr Leu Ser Gln  
 145 150 155 160

Val Lys Lys Leu Leu Lys Pro Tyr Ser Asp Arg Gln Asn Ile Ser Val  
 165 170 175

Gln Leu Phe Ser Ser Leu Lys Lys Gln Gly Ile Asp Glu Ala Asn Arg  
 180 185 190

Thr Val Gly Ser Trp Phe Asp Ala Ala Asp Ala Ala Ala Ser Ser Pro  
 195 200 205

Lys Glu Asn  
 210

<210> 19

<211> 621

<212> DNA

<213> Neisseria meningitidis

<220>

<221> CDS

<222> (1)..(621)

<400> 19

atg aaa cga ttg act tta ttg gcc ttt gtt ttg gct gcc ggt gcg gtt 48  
 Met Lys Arg Leu Thr Leu Leu Ala Phe Val Leu Ala Ala Gly Ala Val  
 1 5 10 15

tcc gca tct ccc aaa gca gac gtg gaa aaa ggc aaa cag gtt gcc gca 96  
 Ser Ala Ser Pro Lys Ala Asp Val Glu Lys Gly Lys Gln Val Ala Ala  
 20 25 30

acg gtt tgt gcg gct tgc cat gca gca gac ggt aac agc ggc att gcg 144  
 Thr Val Cys Ala Ala Cys His Ala Ala Asp Gly Asn Ser Gly Ile Ala  
 35 40 45

atg tat ccg cgt ttg gcg gca cag cat act gct tac atc tat cat caa 192  
 Met Tyr Pro Arg Leu Ala Ala Gln His Thr Ala Tyr Ile Tyr His Gln  
 50 55 60

acc atc ggc atc cgc gac ggt aaa cgc acc cac ggt tcg gca gct gtg 240  
 Thr Ile Gly Ile Arg Asp Gly Lys Arg Thr His Gly Ser Ala Ala Val  
 65 70 75 80

atg aaa ccg gtg gta atg aat ttg agc gat cag gat att ttg aac gta 288  
 Met Lys Pro Val Val Met Asn Leu Ser Asp Gln Asp Ile Leu Asn Val  
 85 90 95

tcc gca ttc tat gcc aaa cag cag ccc aaa tcc ggt gaa gcc aat cct 336  
 Ser Ala Phe Tyr Ala Lys Gln Gln Pro Lys Ser Gly Glu Ala Asn Pro  
 100 105 110

aag gaa aat ccc gaa ttg ggt gcg aaa atc tat cgc ggc ggt ttg agc 384  
 Lys Glu Asn Pro Glu Leu Gly Ala Lys Ile Tyr Arg Gly Gly Leu Ser  
           115                          120                          125

gat aaa aaa gtg ccg gcg tgt atg tcc tgc cac ggt ccg agc ggt gcg 432  
 Asp Lys Lys Val Pro Ala Cys Met Ser Cys His Gly Pro Ser Gly Ala  
           130                          135                          140

ggt atg ccg ggg ggc gga agc gaa att cag gct tat ccg cgt ttg ggc 480  
 Gly Met Pro Gly Gly Gly Ser Glu Ile Gln Ala Tyr Pro Arg Leu Gly  
 145                          150                          155                          160

ggt cag cat cag gca tat att gtt gaa cag atg aat gcc tac aag tcc 528  
 Gly Gln His Gln Ala Tyr Ile Val Glu Gln Met Asn Ala Tyr Lys Ser  
                           165                          170                          175

ggt cag cgt aaa aat acc atc atg gaa gat att gca aac cgt atg tct 576  
 Gly Gln Arg Lys Asn Thr Ile Met Glu Asp Ile Ala Asn Arg Met Ser  
                           180                          185                          190

gaa gaa gat ttg aaa gcg gtc gcc aac ttt atc caa ggt ttg cgt 621  
 Glu Glu Asp Leu Lys Ala Val Ala Asn Phe Ile Gln Gly Leu Arg  
                           195                          200                          205

<210> 20

<211> 207

<212> PRT

<213> Neisseria meningitidis

<400> 20

Met Lys Arg Leu Thr Leu Leu Ala Phe Val Leu Ala Ala Gly Ala Val  
       1                          5                          10                          15

Ser Ala Ser Pro Lys Ala Asp Val Glu Lys Gly Lys Gln Val Ala Ala  
           20                          25                          30

Thr Val Cys Ala Ala Cys His Ala Ala Asp Gly Asn Ser Gly Ile Ala  
           35                          40                          45

Met Tyr Pro Arg Leu Ala Ala Gln His Thr Ala Tyr Ile Tyr His Gln  
       50                          55                          60

Thr Ile Gly Ile Arg Asp Gly Lys Arg Thr His Gly Ser Ala Ala Val  
       65                          70                          75                          80

Met Lys Pro Val Val Met Asn Leu Ser Asp Gln Asp Ile Leu Asn Val

	85		90		95
Ser Ala Phe Tyr Ala Lys Gln Gln Pro Lys Ser Gly Glu Ala Asn Pro					
	100		105		110
Lys Glu Asn Pro Glu Leu Gly Ala Lys Ile Tyr Arg Gly Gly Leu Ser					
	115		120		125
Asp Lys Lys Val Pro Ala Cys Met Ser Cys His Gly Pro Ser Gly Ala					
	130		135		140
Gly Met Pro Gly Gly Gly Ser Glu Ile Gln Ala Tyr Pro Arg Leu Gly					
	145		150		155
Gly Gln His Gln Ala Tyr Ile Val Glu Gln Met Asn Ala Tyr Lys Ser					
	165		170		175
Gly Gln Arg Lys Asn Thr Ile Met Glu Asp Ile Ala Asn Arg Met Ser					
	180		185		190
Glu Glu Asp Leu Lys Ala Val Ala Asn Phe Ile Gln Gly Leu Arg					
	195		200		205

&lt;210&gt; 21

&lt;211&gt; 765

&lt;212&gt; DNA

&lt;213&gt; Neisseria meningitidis

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(765)

&lt;400&gt; 21

atg ccg tct gaa gcc cga ttt ttc agg ctt cag acg gca ttt ccc cgt	48
Met Pro Ser Glu Ala Arg Phe Phe Arg Leu Gln Thr Ala Phe Pro Arg	
1 5 10 15	
ttg att tgc ggt ata atc cgc ctt tac cca ttg ttt gca aag cac aat	96
Leu Ile Cys Gly Ile Ile Arg Leu Tyr Pro Leu Phe Ala Lys His Asn	
20 25 30	
atg aca cgc aaa atc ctc gtt acc tcc gcc ctg ccc tat gcc aac ggc	144
Met Thr Arg Lys Ile Leu Val Thr Ser Ala Leu Pro Tyr Ala Asn Gly	
35 40 45	
agc atc cac ctc ggc cac atg gtc gaa cac atc caa acc gac gtt tgg	192

Ser	Ile	His	Leu	Gly	His	Met	Val	Glu	His	Ile	Gln	Thr	Asp	Val	Trp	
50						55					60					
gtg	cgc	ttt	caa	aaa	ctg	cgc	ggc	aac	gaa	tgc	cac	tac	tgc	tgc	gcc	240
Val	Arg	Phe	Gln	Lys	Leu	Arg	Gly	Asn	Glu	Cys	His	Tyr	Cys	Cys	Ala	
65					70					75					80	
gac	gac	acc	cac	ggc	acg	ccc	gtg	atg	ctt	gcc	gcg	caa	aaa	caa	ggc	288
Asp	Asp	Thr	His	Gly	Thr	Pro	Val	Met	Leu	Ala	Ala	Gln	Lys	Gln	Gly	
				85					90					95		
atc	gcg	ccc	gaa	gac	atg	att	gcc	aaa	gtg	cgc	gaa	gag	cac	ctc	gcc	336
Ile	Ala	Pro	Glu	Asp	Met	Ile	Ala	Lys	Val	Arg	Glu	Glu	His	Leu	Ala	
			100					105					110			
gac	ttt	act	ggc	ttt	ttc	atc	ggt	tac	gac	aat	tat	tac	agc	acc	cat	384
Asp	Phe	Thr	Gly	Phe	Phe	Ile	Gly	Tyr	Asp	Asn	Tyr	Tyr	Ser	Thr	His	
		115					120					125				
tcc	cct	gaa	aac	aaa	cag	ttt	tcc	caa	gac	att	tac	cgc	gcg	ctg	aaa	432
Ser	Pro	Glu	Asn	Lys	Gln	Phe	Ser	Gln	Asp	Ile	Tyr	Arg	Ala	Leu	Lys	
	130					135					140					
gcc	aac	ggc	aag	att	gag	agc	cgc	gtc	atc	gag	cag	ctt	ttc	gac	ccc	480
Ala	Asn	Gly	Lys	Ile	Glu	Ser	Arg	Val	Ile	Glu	Gln	Leu	Phe	Asp	Pro	
145					150					155					160	
gaa	aaa	caa	atg	ttc	ctg	ccc	gac	cgc	ttc	gtt	aaa	ggc	gaa	tgc	ccg	528
Glu	Lys	Gln	Met	Phe	Leu	Pro	Asp	Arg	Phe	Val	Lys	Gly	Glu	Cys	Pro	
				165					170					175		
aaa	tgc	cac	gcc	caa	gac	caa	tac	ggc	gac	aac	tgc	gaa	gtc	tgc	ggc	576
Lys	Cys	His	Ala	Gln	Asp	Gln	Tyr	Gly	Asp	Asn	Cys	Glu	Val	Cys	Gly	
			180					185					190			
acg	acc	tat	tcc	ccg	acc	gaa	ctg	att	aac	ccg	tat	tcc	gcc	gtt	tcc	624
Thr	Thr	Tyr	Ser	Pro	Thr	Glu	Leu	Ile	Asn	Pro	Tyr	Ser	Ala	Val	Ser	
		195					200					205				
ggc	gcg	aaa	ccc	gaa	ttg	cgc	gaa	tcc	gaa	cac	ttc	ttc	ttc	aaa	ctg	672
Gly	Ala	Lys	Pro	Glu	Leu	Arg	Glu	Ser	Glu	His	Phe	Phe	Phe	Lys	Leu	
	210					215				220						
gga	gaa	tgc	gcc	gac	ttc	ctc	aaa	gca	tgg	act	tcc	ggc	aac	aac	ccg	720
Gly	Glu	Cys	Ala	Asp	Phe	Leu	Lys	Ala	Trp	Thr	Ser	Gly	Asn	Asn	Pro	
225					230					235					240	
cac	gac	ggc	aag	ccc	cat	ctg	caa	gcc	gaa	gcc	ctc	aac	aaa	atg		765

His Asp Gly Lys Pro His Leu Gln Ala Glu Ala Leu Asn Lys Met  
                                   245                                  250                                  255

<210> 22

<211> 255

<212> PRT

<213> Neisseria meningitidis

<400> 22

Met Pro Ser Glu Ala Arg Phe Phe Arg Leu Gln Thr Ala Phe Pro Arg  
   1                                  5                                  10                                  15

Leu Ile Cys Gly Ile Ile Arg Leu Tyr Pro Leu Phe Ala Lys His Asn  
                                   20                                  25                                  30

Met Thr Arg Lys Ile Leu Val Thr Ser Ala Leu Pro Tyr Ala Asn Gly  
                                   35                                  40                                  45

Ser Ile His Leu Gly His Met Val Glu His Ile Gln Thr Asp Val Trp  
   50                                  55                                  60

Val Arg Phe Gln Lys Leu Arg Gly Asn Glu Cys His Tyr Cys Cys Ala  
   65                                  70                                  75                                  80

Asp Asp Thr His Gly Thr Pro Val Met Leu Ala Ala Gln Lys Gln Gly  
                                   85                                  90                                  95

Ile Ala Pro Glu Asp Met Ile Ala Lys Val Arg Glu Glu His Leu Ala  
                                   100                                  105                                  110

Asp Phe Thr Gly Phe Phe Ile Gly Tyr Asp Asn Tyr Tyr Ser Thr His  
                                   115                                  120                                  125

Ser Pro Glu Asn Lys Gln Phe Ser Gln Asp Ile Tyr Arg Ala Leu Lys  
   130                                  135                                  140

Ala Asn Gly Lys Ile Glu Ser Arg Val Ile Glu Gln Leu Phe Asp Pro  
   145                                  150                                  155                                  160

Glu Lys Gln Met Phe Leu Pro Asp Arg Phe Val Lys Gly Glu Cys Pro  
                                   165                                  170                                  175

Lys Cys His Ala Gln Asp Gln Tyr Gly Asp Asn Cys Glu Val Cys Gly  
                                   180                                  185                                  190

Thr Thr Tyr Ser Pro Thr Glu Leu Ile Asn Pro Tyr Ser Ala Val Ser  
                                   195                                  200                                  205



Gly Ala Lys Pro Glu Leu Arg Glu Ser Glu His Phe Phe Phe Lys Leu  
 210 215 220

Gly Glu Cys Ala Asp Phe Leu Lys Ala Trp Thr Ser Gly Asn Asn Pro  
 225 230 235 240

His Asp Gly Lys Pro His Leu Gln Ala Glu Ala Leu Asn Lys Met  
 245 250 255

<210> 23

<211> 1539

<212> DNA

<213> Neisseria meningitidis

<220>

<221> CDS

<222> (1)..(1539)

<400> 23

atg aag ttt tta gac cgt gag gca agc att gcc aag ccg ggt ttc aac 48  
 Met Lys Phe Leu Asp Arg Glu Ala Ser Ile Ala Lys Pro Gly Phe Asn  
 1 5 10 15

cgt tgg ctc gta ccg ccc gca gca ttg gcg gta cac ctt gcc atc ggg 96  
 Arg Trp Leu Val Pro Pro Ala Ala Leu Ala Val His Leu Ala Ile Gly  
 20 25 30

cag att tac gcc tat tcc gta ttc aac gcg ccg ctg acc aaa ctt atc 144  
 Gln Ile Tyr Ala Tyr Ser Val Phe Asn Ala Pro Leu Thr Lys Leu Ile  
 35 40 45

ggc ata acc gaa tcg gcg gcc gga gat tgg aag ctg acg acc gta ggt 192  
 Gly Ile Thr Glu Ser Ala Ala Gly Asp Trp Lys Leu Thr Thr Val Gly  
 50 55 60

tgg att ttc agt atc gca ctc gcg atg ctg ggc gcg tcg gcc gcc ctg 240  
 Trp Ile Phe Ser Ile Ala Leu Ala Met Leu Gly Ala Ser Ala Ala Leu  
 65 70 75 80

ttc ggt acg tgg atg gaa cgg gta ggg ccg cgc aaa gcc ata ttt gcc 288  
 Phe Gly Thr Trp Met Glu Arg Val Gly Pro Arg Lys Ala Ile Phe Ala  
 85 90 95

gcc gcc tgc tgt ttc agc ctg ggc ttc ttc gta tcc gca ttc ggc gtg 336  
 Ala Ala Cys Cys Phe Ser Leu Gly Phe Phe Val Ser Ala Phe Gly Val

100	105	110	
cgt acg cac aac ctc ttc ctg ctc tat ttg ggc aac ggc gtc atc ggc			384
Arg Thr His Asn Leu Phe Leu Leu Tyr Leu Gly Asn Gly Val Ile Gly			
115	120	125	
ggc gta ggc ttg ggt ttg ggc tac atc ggg ccg gtt tcc aca ctg atg			432
Gly Val Gly Leu Gly Leu Gly Tyr Ile Gly Pro Val Ser Thr Leu Met			
130	135	140	
aaa tgg ttt ccc gac aag ccg ggt atg gcg acc ggt ttg gcg att atg			480
Lys Trp Phe Pro Asp Lys Pro Gly Met Ala Thr Gly Leu Ala Ile Met			
145	150	155	160
ggt ttc ggt ggc ggc gca atg ctg gcc tcg ccg ctt tcc gta tca ctg			528
Gly Phe Gly Gly Gly Ala Met Leu Ala Ser Pro Leu Ser Val Ser Leu			
165	170	175	
atg aac acc ttt tca aac gct act tcg gtt ggg gtt gcc gaa acc ttc			576
Met Asn Thr Phe Ser Asn Ala Thr Ser Val Gly Val Ala Glu Thr Phe			
180	185	190	
gcc gta ttg ggt ctg ctt tac ctc gca ctg atg atg ttc ggc gcg ttt			624
Ala Val Leu Gly Leu Leu Tyr Leu Ala Leu Met Met Phe Gly Ala Phe			
195	200	205	
acc atc cgc gta cct gcc gac ggc tgg aaa cct gaa ggc tat acc gcg			672
Thr Ile Arg Val Pro Ala Asp Gly Trp Lys Pro Glu Gly Tyr Thr Ala			
210	215	220	
ccg aaa acg caa aac aag ctg gtc agc agc aat cat gtc aac gtg tcc			720
Pro Lys Thr Gln Asn Lys Leu Val Ser Ser Asn His Val Asn Val Ser			
225	230	235	240
caa gcc atg aaa acg ccg cag ttt tgg ctg ttg ttc tgg gta ttg tgc			768
Gln Ala Met Lys Thr Pro Gln Phe Trp Leu Leu Phe Trp Val Leu Cys			
245	250	255	
ctg aac gta act gcc ggc atc ggc gta ttg ggt cag gca tcc gtg atg			816
Leu Asn Val Thr Ala Gly Ile Gly Val Leu Gly Gln Ala Ser Val Met			
260	265	270	
att cag gaa ctc ttt tcc gaa acc tcc ata ggc agg cag gcg gca gtc			864
Ile Gln Glu Leu Phe Ser Glu Thr Ser Ile Gly Arg Gln Ala Ala Val			
275	280	285	
ggc gca ggt gcg gcg gca ggc ttc gtc agc ctc ctg agc ctg ttt aac			912
Gly Ala Gly Ala Ala Ala Gly Phe Val Ser Leu Leu Ser Leu Phe Asn			

290	295	300	
atg ggc gga cgc ttt ttg tgg tcg agc gtt tcc gac aaa atc gga cgc			960
Met Gly Gly Arg Phe Leu Trp Ser Ser Val Ser Asp Lys Ile Gly Arg			
305	310	315	320
aaa aac acc tac acc atc ttc ttc gta ctc ggt tcg ctg ctg tat ttc			1008
Lys Asn Thr Tyr Thr Ile Phe Phe Val Leu Gly Ser Leu Leu Tyr Phe			
	325	330	335
gcc gtt ccc tcc atc ggc gag ggc ggc agc aaa gcc ctg ttc atc atc			1056
Ala Val Pro Ser Ile Gly Glu Gly Gly Ser Lys Ala Leu Phe Ile Ile			
	340	345	350
ggc ttt tgc gtg att att tcc atg tac ggc ggc gga ttt gcc gcc att			1104
Gly Phe Cys Val Ile Ile Ser Met Tyr Gly Gly Gly Phe Ala Ala Ile			
	355	360	365
ccc gcc tac ctg aaa gac ctg ttc ggc acc tat cag gtc ggc gcg att			1152
Pro Ala Tyr Leu Lys Asp Leu Phe Gly Thr Tyr Gln Val Gly Ala Ile			
	370	375	380
cac gga cgc atc ctg ctg gcc tgg tca acc gcc gcc gtc atc ggc ccg			1200
His Gly Arg Ile Leu Leu Ala Trp Ser Thr Ala Ala Val Ile Gly Pro			
385	390	395	400
gta ctg gtc aat tac ata cgc caa agc caa atc gac agc ggc ata ccg			1248
Val Leu Val Asn Tyr Ile Arg Gln Ser Gln Ile Asp Ser Gly Ile Pro			
	405	410	415
gcg gca cag gca tac agc gta acc atg tac atc atg gcg ggt ctg ctg			1296
Ala Ala Gln Ala Tyr Ser Val Thr Met Tyr Ile Met Ala Gly Leu Leu			
	420	425	430
att atc ggt ttg ttg tgc aac ctc gcc gtc aaa tcc gta cac gaa aaa			1344
Ile Ile Gly Leu Leu Cys Asn Leu Ala Val Lys Ser Val His Glu Lys			
	435	440	445
cac cac gaa aaa gac atc aaa acc gcc gca cac agc ggc aac ccc gat			1392
His His Glu Lys Asp Ile Lys Thr Ala Ala His Ser Gly Asn Pro Asp			
	450	455	460
gac gaa acc gcc ata tcc gac gct tac ctt gtg ggc gaa aaa gtt tcc			1440
Asp Glu Thr Ala Ile Ser Asp Ala Tyr Leu Val Gly Glu Lys Val Ser			
465	470	475	480
ggc ggc ggc ata tcg gtc tgg tgg cgt tgg gca ttg gcc gtc ata ccg			1488
Gly Gly Gly Ile Ser Val Trp Trp Arg Trp Ala Leu Ala Val Ile Pro			

	485	490	495	
ctc gcc tac ggc gtg gtg atg atc ttt gtc aaa gca ctc gac ctt ttc				1536
Leu Ala Tyr Gly Val Val Met Ile Phe Val Lys Ala Leu Asp Leu Phe				
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tcc				1539
Ser				
<210> 24				
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<213> Neisseria meningitidis				
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Gln Ile Tyr Ala Tyr Ser Val Phe Asn Ala Pro Leu Thr Lys Leu Ile				
35 40 45				
Gly Ile Thr Glu Ser Ala Ala Gly Asp Trp Lys Leu Thr Thr Val Gly				
50 55 60				
Trp Ile Phe Ser Ile Ala Leu Ala Met Leu Gly Ala Ser Ala Ala Leu				
65 70 75 80				
Phe Gly Thr Trp Met Glu Arg Val Gly Pro Arg Lys Ala Ile Phe Ala				
85 90 95				
Ala Ala Cys Cys Phe Ser Leu Gly Phe Phe Val Ser Ala Phe Gly Val				
100 105 110				
Arg Thr His Asn Leu Phe Leu Leu Tyr Leu Gly Asn Gly Val Ile Gly				
115 120 125				
Gly Val Gly Leu Gly Leu Gly Tyr Ile Gly Pro Val Ser Thr Leu Met				
130 135 140				
Lys Trp Phe Pro Asp Lys Pro Gly Met Ala Thr Gly Leu Ala Ile Met				
145 150 155 160				
Gly Phe Gly Gly Gly Ala Met Leu Ala Ser Pro Leu Ser Val Ser Leu				
165 170 175				

Met Asn Thr Phe Ser Asn Ala Thr Ser Val Gly Val Ala Glu Thr Phe  
 180 185 190

Ala Val Leu Gly Leu Leu Tyr Leu Ala Leu Met Met Phe Gly Ala Phe  
 195 200 205

Thr Ile Arg Val Pro Ala Asp Gly Trp Lys Pro Glu Gly Tyr Thr Ala  
 210 215 220

Pro Lys Thr Gln Asn Lys Leu Val Ser Ser Asn His Val Asn Val Ser  
 225 230 235 240

Gln Ala Met Lys Thr Pro Gln Phe Trp Leu Leu Phe Trp Val Leu Cys  
 245 250 255

Leu Asn Val Thr Ala Gly Ile Gly Val Leu Gly Gln Ala Ser Val Met  
 260 265 270

Ile Gln Glu Leu Phe Ser Glu Thr Ser Ile Gly Arg Gln Ala Ala Val  
 275 280 285

Gly Ala Gly Ala Ala Ala Gly Phe Val Ser Leu Leu Ser Leu Phe Asn  
 290 295 300

Met Gly Gly Arg Phe Leu Trp Ser Ser Val Ser Asp Lys Ile Gly Arg  
 305 310 315 320

Lys Asn Thr Tyr Thr Ile Phe Phe Val Leu Gly Ser Leu Leu Tyr Phe  
 325 330 335

Ala Val Pro Ser Ile Gly Glu Gly Gly Ser Lys Ala Leu Phe Ile Ile  
 340 345 350

Gly Phe Cys Val Ile Ile Ser Met Tyr Gly Gly Gly Phe Ala Ala Ile  
 355 360 365

Pro Ala Tyr Leu Lys Asp Leu Phe Gly Thr Tyr Gln Val Gly Ala Ile  
 370 375 380

His Gly Arg Ile Leu Leu Ala Trp Ser Thr Ala Ala Val Ile Gly Pro  
 385 390 395 400

Val Leu Val Asn Tyr Ile Arg Gln Ser Gln Ile Asp Ser Gly Ile Pro  
 405 410 415

Ala Ala Gln Ala Tyr Ser Val Thr Met Tyr Ile Met Ala Gly Leu Leu  
 420 425 430

Ile Ile Gly Leu Leu Cys Asn Leu Ala Val Lys Ser Val His Glu Lys  
 435 440 445

His His Glu Lys Asp Ile Lys Thr Ala Ala His Ser Gly Asn Pro Asp  
 450 455 460

Asp Glu Thr Ala Ile Ser Asp Ala Tyr Leu Val Gly Glu Lys Val Ser  
 465 470 475 480

Gly Gly Gly Ile Ser Val Trp Trp Arg Trp Ala Leu Ala Val Ile Pro  
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Leu Ala Tyr Gly Val Val Met Ile Phe Val Lys Ala Leu Asp Leu Phe  
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Ser

<210> 25

<211> 1038

<212> DNA

<213> Neisseria meningitidis

<220>

<221> CDS

<222> (1)..(1038)

<400> 25

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tat ttc gcc caa tca tta gcc acc gtc gtg aat cag act tgg cgc aac 96  
 Tyr Phe Ala Gln Ser Leu Ala Thr Val Val Asn Gln Thr Trp Arg Asn  
 20 25 30

ttg gag att ttg att gtc gat gac ggc tcg aca gac ggt acg ctt gcc 144  
 Leu Glu Ile Leu Ile Val Asp Asp Gly Ser Thr Asp Gly Thr Leu Ala  
 35 40 45

att gcc aag gat ttt caa aag cgg gac agc cgt atc aaa atc ctt gca 192  
 Ile Ala Lys Asp Phe Gln Lys Arg Asp Ser Arg Ile Lys Ile Leu Ala  
 50 55 60

caa gct caa aat tcc ggc ctg att ccc tct tta aac atc ggg ctg gac 240

Gln	Ala	Gln	Asn	Ser	Gly	Leu	Ile	Pro	Ser	Leu	Asn	Ile	Gly	Leu	Asp	
65					70					75					80	
gaa	ttg	gca	aag	tca	gga	atg	ggg	gaa	tat	att	gca	cgc	acc	gat	gcc	288
Glu	Leu	Ala	Lys	Ser	Gly	Met	Gly	Glu	Tyr	Ile	Ala	Arg	Thr	Asp	Ala	
				85					90					95		
gac	gat	att	gcc	gcc	ccc	gac	tgg	att	gag	aaa	atc	gtg	ggc	gag	atg	336
Asp	Asp	Ile	Ala	Ala	Pro	Asp	Trp	Ile	Glu	Lys	Ile	Val	Gly	Glu	Met	
			100					105					110			
gaa	aaa	gac	cgc	agc	atc	atc	gcg	atg	ggc	gcg	tgg	ctg	gaa	gtt	ttg	384
Glu	Lys	Asp	Arg	Ser	Ile	Ile	Ala	Met	Gly	Ala	Trp	Leu	Glu	Val	Leu	
		115					120					125				
tcg	gaa	gaa	aag	gac	ggc	aac	cgg	ctg	gcg	cgg	cat	cac	agg	cac	ggc	432
Ser	Glu	Glu	Lys	Asp	Gly	Asn	Arg	Leu	Ala	Arg	His	His	Arg	His	Gly	
	130					135				140						
aaa	att	tgg	aaa	aag	ccg	acc	cgg	cac	gaa	gat	att	gcc	gac	ttt	ttc	480
Lys	Ile	Trp	Lys	Lys	Pro	Thr	Arg	His	Glu	Asp	Ile	Ala	Asp	Phe	Phe	
145					150					155					160	
cct	ttc	ggc	aac	ccc	ata	cac	aac	aac	acg	atg	att	atg	cgg	cgc	agc	528
Pro	Phe	Gly	Asn	Pro	Ile	His	Asn	Asn	Thr	Met	Ile	Met	Arg	Arg	Ser	
				165					170					175		
gtc	att	gac	ggc	gga	ttg	cgt	tac	aac	acc	gag	cgg	gat	tgg	gcg	gaa	576
Val	Ile	Asp	Gly	Gly	Leu	Arg	Tyr	Asn	Thr	Glu	Arg	Asp	Trp	Ala	Glu	
			180					185					190			
gat	tac	caa	ttt	tgg	tac	gat	gtc	agc	aaa	ttg	ggc	agg	ctg	gct	tat	624
Asp	Tyr	Gln	Phe	Trp	Tyr	Asp	Val	Ser	Lys	Leu	Gly	Arg	Leu	Ala	Tyr	
		195					200					205				
tat	ccc	gaa	gcc	ttg	gtc	aaa	tac	cgc	ctt	cac	gcc	aat	cag	gtt	tca	672
Tyr	Pro	Glu	Ala	Leu	Val	Lys	Tyr	Arg	Leu	His	Ala	Asn	Gln	Val	Ser	
	210					215					220					
tcc	aaa	tac	agc	atc	cgc	caa	cac	gaa	atc	gcg	caa	ggc	atc	caa	aaa	720
Ser	Lys	Tyr	Ser	Ile	Arg	Gln	His	Glu	Ile	Ala	Gln	Gly	Ile	Gln	Lys	
225					230					235				240		
acc	gcc	aga	aac	gat	ttt	ttg	cag	tct	atg	ggt	ttt	aaa	acc	cgg	ttc	768
Thr	Ala	Arg	Asn	Asp	Phe	Leu	Gln	Ser	Met	Gly	Phe	Lys	Thr	Arg	Phe	
			245						250					255		
gac	agc	ctt	gaa	tac	cgc	caa	ata	aaa	gca	gta	gcg	tat	gaa	ttg	ctg	816

Asp Ser Leu Glu Tyr Arg Gln Ile Lys Ala Val Ala Tyr Glu Leu Leu  
 260 265 270  
  
 gag aaa cat ttg ccg gaa gaa gat ttt gaa cgc gcc cgc cgg ttt ttg 864  
 Glu Lys His Leu Pro Glu Glu Asp Phe Glu Arg Ala Arg Arg Phe Leu  
 275 280 285  
  
 tac caa tgc ttc aaa cgg acg gac acg ccg ccc gcc ggc gcg tgg ctg 912  
 Tyr Gln Cys Phe Lys Arg Thr Asp Thr Pro Pro Ala Gly Ala Trp Leu  
 290 295 300  
  
 gat ttc gcg gca gac ggc aag atg agg cgg ctg ttt acc atg agg caa 960  
 Asp Phe Ala Ala Asp Gly Lys Met Arg Arg Leu Phe Thr Met Arg Gln  
 305 310 315 320  
  
 tac ttc ggc att ttg cac cgg ctg att aaa aac cgc cgg cag gcg cgg 1008  
 Tyr Phe Gly Ile Leu His Arg Leu Ile Lys Asn Arg Arg Gln Ala Arg  
 325 330 335  
  
 tcg gat tcg gca ggg aaa gaa cag gag att 1038  
 Ser Asp Ser Ala Gly Lys Glu Gln Glu Ile  
 340 345

&lt;210&gt; 26

&lt;211&gt; 346

&lt;212&gt; PRT

&lt;213&gt; Neisseria meningitidis

&lt;400&gt; 26

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 Tyr Phe Ala Gln Ser Leu Ala Thr Val Val Asn Gln Thr Trp Arg Asn  
 20 25 30  
  
 Leu Glu Ile Leu Ile Val Asp Asp Gly Ser Thr Asp Gly Thr Leu Ala  
 35 40 45  
  
 Ile Ala Lys Asp Phe Gln Lys Arg Asp Ser Arg Ile Lys Ile Leu Ala  
 50 55 60  
  
 Gln Ala Gln Asn Ser Gly Leu Ile Pro Ser Leu Asn Ile Gly Leu Asp  
 65 70 75 80  
  
 Glu Leu Ala Lys Ser Gly Met Gly Glu Tyr Ile Ala Arg Thr Asp Ala  
 85 90 95



Asp	Asp	Ile	Ala	Ala	Pro	Asp	Trp	Ile	Glu	Lys	Ile	Val	Gly	Glu	Met	100	105	110	
Glu	Lys	Asp	Arg	Ser	Ile	Ile	Ala	Met	Gly	Ala	Trp	Leu	Glu	Val	Leu	115	120	125	
Ser	Glu	Glu	Lys	Asp	Gly	Asn	Arg	Leu	Ala	Arg	His	His	Arg	His	Gly	130	135	140	
Lys	Ile	Trp	Lys	Lys	Pro	Thr	Arg	His	Glu	Asp	Ile	Ala	Asp	Phe	Phe	145	150	155	160
Pro	Phe	Gly	Asn	Pro	Ile	His	Asn	Asn	Thr	Met	Ile	Met	Arg	Arg	Ser	165	170	175	
Val	Ile	Asp	Gly	Gly	Leu	Arg	Tyr	Asn	Thr	Glu	Arg	Asp	Trp	Ala	Glu	180	185	190	
Asp	Tyr	Gln	Phe	Trp	Tyr	Asp	Val	Ser	Lys	Leu	Gly	Arg	Leu	Ala	Tyr	195	200	205	
Tyr	Pro	Glu	Ala	Leu	Val	Lys	Tyr	Arg	Leu	His	Ala	Asn	Gln	Val	Ser	210	215	220	
Ser	Lys	Tyr	Ser	Ile	Arg	Gln	His	Glu	Ile	Ala	Gln	Gly	Ile	Gln	Lys	225	230	235	240
Thr	Ala	Arg	Asn	Asp	Phe	Leu	Gln	Ser	Met	Gly	Phe	Lys	Thr	Arg	Phe	245	250	255	
Asp	Ser	Leu	Glu	Tyr	Arg	Gln	Ile	Lys	Ala	Val	Ala	Tyr	Glu	Leu	Leu	260	265	270	
Glu	Lys	His	Leu	Pro	Glu	Glu	Asp	Phe	Glu	Arg	Ala	Arg	Arg	Phe	Leu	275	280	285	
Tyr	Gln	Cys	Phe	Lys	Arg	Thr	Asp	Thr	Pro	Pro	Ala	Gly	Ala	Trp	Leu	290	295	300	
Asp	Phe	Ala	Ala	Asp	Gly	Lys	Met	Arg	Arg	Leu	Phe	Thr	Met	Arg	Gln	305	310	315	320
Tyr	Phe	Gly	Ile	Leu	His	Arg	Leu	Ile	Lys	Asn	Arg	Arg	Gln	Ala	Arg	325	330	335	
Ser	Asp	Ser	Ala	Gly	Lys	Glu	Gln	Glu	Ile							340	345		

&lt;210&gt; 27

&lt;211&gt; 1856

&lt;212&gt; DNA

<213> *Neisseria meningitidis*

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(1857)

&lt;400&gt; 27

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   1             5             10             15

ggc gcg cgc gcg ttg tgg cgc gcc acc ggc gtg atg gaa acc gac ttc      96
Gly Ala Arg Ala Leu Trp Arg Ala Thr Gly Val Met Glu Thr Asp Phe
           20             25             30

ggc aaa ccg att atc gcc gtt gcc aac tcg ttc acc caa ttc gtg cca      144
Gly Lys Pro Ile Ile Ala Val Ala Asn Ser Phe Thr Gln Phe Val Pro
           35             40             45

ggg cat gtc cac ctg cac aat atg ggc cag ctg gtt gcc cgc gaa atc      192
Gly His Val His Leu His Asn Met Gly Gln Leu Val Ala Arg Glu Ile
           50             55             60

gaa aaa gcc ggc gcc atc gcc aaa gaa ttc aac acc atc gcc atc gac      240
Glu Lys Ala Gly Ala Ile Ala Lys Glu Phe Asn Thr Ile Ala Ile Asp
           65             70             75             80

gac ggc atc gct atg gga cac agc ggt atg ctg tat tcc ctg ccc agc      288
Asp Gly Ile Ala Met Gly His Ser Gly Met Leu Tyr Ser Leu Pro Ser
           85             90             95

cgc gat ttg att gcc gac tcc atc gaa tat atg gtc aat gcc cac tgc      336
Arg Asp Leu Ile Ala Asp Ser Ile Glu Tyr Met Val Asn Ala His Cys
           100            105            110

gcc gac gcg ctg gtg tgc att tcc aac tgc gac aaa atc acc ccg ggc      384
Ala Asp Ala Leu Val Cys Ile Ser Asn Cys Asp Lys Ile Thr Pro Gly
           115            120            125

atg ctg att gcc gcg atg cgc ctg aac atc ccg acc atc ttc gtt tcc      432
Met Leu Ile Ala Ala Met Arg Leu Asn Ile Pro Thr Ile Phe Val Ser
           130            135            140

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Gly Gly Pro Met Glu Ala Gly Lys Val Ile Gly Val Ala Asn Ile Gln	
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ccc gaa cgc cgt ttg gac ttg att gac gcg atg att gaa tcg gcg gac	528
Pro Glu Arg Arg Leu Asp Leu Ile Asp Ala Met Ile Glu Ser Ala Asp	
165 170 175	
gac aat atc agc aac cgg caa gtt gaa gaa gtc gaa caa aac gcc tgc	576
Asp Asn Ile Ser Asn Arg Gln Val Glu Glu Val Glu Gln Asn Ala Cys	
180 185 190	
ccg acc tgc ggc tcg tgt tcg ggt atg ttt acg gca aac tcg atg aac	624
Pro Thr Cys Gly Ser Cys Ser Gly Met Phe Thr Ala Asn Ser Met Asn	
195 200 205	
tgc ctg acc gaa gca ctc ggg ctg tcc ctg ccg ggc aac ggt tct tac	672
Cys Leu Thr Glu Ala Leu Gly Leu Ser Leu Pro Gly Asn Gly Ser Tyr	
210 215 220	
ctc gcc acc cac gtc ggc cgc aaa gaa ctg ttc ctc gaa gcc ggc cgt	720
Leu Ala Thr His Val Gly Arg Lys Glu Leu Phe Leu Glu Ala Gly Arg	
225 230 235 240	
atg att gtc gaa atc acc aaa cgc tat tac gag caa aac gat gaa acc	768
Met Ile Val Glu Ile Thr Lys Arg Tyr Tyr Glu Gln Asn Asp Glu Thr	
245 250 255	
gtg tta ccg cgc agc att gcc acc aaa aaa gcg ttt gaa aac gct atg	816
Val Leu Pro Arg Ser Ile Ala Thr Lys Lys Ala Phe Glu Asn Ala Met	
260 265 270	
acc atg gac att gcc atg ggc ggc agc acc aac act att ttg cat tta	864
Thr Met Asp Ile Ala Met Gly Gly Ser Thr Asn Thr Ile Leu His Leu	
275 280 285	
ctc gcc gtt gcc aac gaa gcg ggc gtg gat ttc aaa atg gca gac atc	912
Leu Ala Val Ala Asn Glu Ala Gly Val Asp Phe Lys Met Ala Asp Ile	
290 295 300	
gac cgc tta agc cgc gtt gtg ccc tgc atc tgc aaa acc gca ccc aac	960
Asp Arg Leu Ser Arg Val Val Pro Cys Ile Cys Lys Thr Ala Pro Asn	
305 310 315 320	
aac cac gac tac tat atg gaa gac gtg cac cga gcc ggc ggc atc ttc	1008
Asn His Asp Tyr Tyr Met Glu Asp Val His Arg Ala Gly Gly Ile Phe	
325 330 335	

gcc atc ctg aaa gaa ttg gac aaa gcg ggc aag ctg cac acc gac gtg 1056  
 Ala Ile Leu Lys Glu Leu Asp Lys Ala Gly Lys Leu His Thr Asp Val  
 340 345 350

cac act atc cac gcg ccg acg ctg aaa gac gcg att gaa aaa tgg gac 1104  
 His Thr Ile His Ala Pro Thr Leu Lys Asp Ala Ile Glu Lys Trp Asp  
 355 360 365

gta acc aac cct gaa aac acc cac gcc atc gaa cgc ttc aaa gcc gcg 1152  
 Val Thr Asn Pro Glu Asn Thr His Ala Ile Glu Arg Phe Lys Ala Ala  
 370 375 380

ccc gcc gcc gta cgc acc acc caa gcg ttc tcg caa aac cgt atg tgg 1200  
 Pro Gly Gly Val Arg Thr Thr Gln Ala Phe Ser Gln Asn Arg Met Trp  
 385 390 395 400

aaa acc ctc gac ctc gac cgc gaa aaa ggc tgt atc cgc gac gtg gca 1248  
 Lys Thr Leu Asp Leu Asp Arg Glu Lys Gly Cys Ile Arg Asp Val Ala  
 405 410 415

cac gcc tac tcg caa gac ggc ggt ttg gcg gtc ttg ttc ggc aac atc 1296  
 His Ala Tyr Ser Gln Asp Gly Gly Leu Ala Val Leu Phe Gly Asn Ile  
 420 425 430

gcc gag cgc gcc tgc gtg gta aaa acc gca gcc gtg gac gag agc atc 1344  
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 450 455 460

gta gaa gcc att ttg gcc aac caa atc gtc gcc gcc gac atc gtc atc 1440  
 Val Glu Gly Ile Leu Gly Asn Gln Ile Val Ala Gly Asp Ile Val Ile  
 465 470 475 480

atc cgc tac gaa gcc ccg aaa gcc gcc ccg gcc atg cag gaa atg ctg 1488  
 Ile Arg Tyr Glu Gly Pro Lys Gly Gly Pro Gly Met Gln Glu Met Leu  
 485 490 495

tat ccg act tcc tac ctg aaa tct aaa gcc ctc gcc aaa gcc tgc gct 1536  
 Tyr Pro Thr Ser Tyr Leu Lys Ser Lys Gly Leu Gly Lys Ala Cys Ala  
 500 505 510

ctc tta acc gac gga cgc ttc tcc gcc gcc aca tca ggt ttg tcc atc 1584  
 Leu Leu Thr Asp Gly Arg Phe Ser Gly Gly Thr Ser Gly Leu Ser Ile  
 515 520 525

gga cac gcc tcg ccc gaa gcg gcg gaa ggt ggc gcg atc ggt ttg gta 1632  
 Gly His Ala Ser Pro Glu Ala Ala Glu Gly Gly Ala Ile Gly Leu Val  
 530 535 540

cac gaa ggc gat acc gtc gaa atc gac atc ccc aac cgc agc atc cgc 1680  
 His Glu Gly Asp Thr Val Glu Ile Asp Ile Pro Asn Arg Ser Ile Arg  
 545 550 555 560

ctt gtc att tcc gac gaa gaa ctc gcc gcc cgc cgt gcc gaa atg gaa 1728  
 Leu Val Ile Ser Asp Glu Glu Leu Ala Ala Arg Arg Ala Glu Met Glu  
 565 570 575

gca cgc ggc agc aaa gcg tgg aaa ccg gaa aac cgc gac cgc tac gtc 1776  
 Ala Arg Gly Ser Lys Ala Trp Lys Pro Glu Asn Arg Asp Arg Tyr Val  
 580 585 590

tcc gcc gca tta aga gct tac ggc gcg atg gcg act tcc gcc gac aaa 1824  
 Ser Ala Ala Leu Arg Ala Tyr Gly Ala Met Ala Thr Ser Ala Asp Lys  
 595 600 605

ggc gcg gtg cgc gac gta gcg caa atc gaa aga 1857  
 Gly Ala Val Arg Asp Val Ala Gln Ile Glu Arg  
 610 615

<210> 28

<211> 619

<212> PRT

<213> Neisseria meningitidis

<400> 28

Met Pro Glu Tyr Arg Ser Lys Thr Ser Thr His Gly Arg Asn Met Ala  
 1 5 10 15

Gly Ala Arg Ala Leu Trp Arg Ala Thr Gly Val Met Glu Thr Asp Phe  
 20 25 30

Gly Lys Pro Ile Ile Ala Val Ala Asn Ser Phe Thr Gln Phe Val Pro  
 35 40 45

Gly His Val His Leu His Asn Met Gly Gln Leu Val Ala Arg Glu Ile  
 50 55 60

Glu Lys Ala Gly Ala Ile Ala Lys Glu Phe Asn Thr Ile Ala Ile Asp  
 65 70 75 80

Asp Gly Ile Ala Met Gly His Ser Gly Met Leu Tyr Ser Leu Pro Ser  
 85 90 95

Arg Asp Leu Ile Ala Asp Ser Ile Glu Tyr Met Val Asn Ala His Cys  
 100 105 110  
 Ala Asp Ala Leu Val Cys Ile Ser Asn Cys Asp Lys Ile Thr Pro Gly  
 115 120 125  
 Met Leu Ile Ala Ala Met Arg Leu Asn Ile Pro Thr Ile Phe Val Ser  
 130 135 140  
 Gly Gly Pro Met Glu Ala Gly Lys Val Ile Gly Val Ala Asn Ile Gln  
 145 150 155 160  
 Pro Glu Arg Arg Leu Asp Leu Ile Asp Ala Met Ile Glu Ser Ala Asp  
 165 170 175  
 Asp Asn Ile Ser Asn Arg Gln Val Glu Glu Val Glu Gln Asn Ala Cys  
 180 185 190  
 Pro Thr Cys Gly Ser Cys Ser Gly Met Phe Thr Ala Asn Ser Met Asn  
 195 200 205  
 Cys Leu Thr Glu Ala Leu Gly Leu Ser Leu Pro Gly Asn Gly Ser Tyr  
 210 215 220  
 Leu Ala Thr His Val Gly Arg Lys Glu Leu Phe Leu Glu Ala Gly Arg  
 225 230 235 240  
 Met Ile Val Glu Ile Thr Lys Arg Tyr Tyr Glu Gln Asn Asp Glu Thr  
 245 250 255  
 Val Leu Pro Arg Ser Ile Ala Thr Lys Lys Ala Phe Glu Asn Ala Met  
 260 265 270  
 Thr Met Asp Ile Ala Met Gly Gly Ser Thr Asn Thr Ile Leu His Leu  
 275 280 285  
 Leu Ala Val Ala Asn Glu Ala Gly Val Asp Phe Lys Met Ala Asp Ile  
 290 295 300  
 Asp Arg Leu Ser Arg Val Val Pro Cys Ile Cys Lys Thr Ala Pro Asn  
 305 310 315 320  
 Asn His Asp Tyr Tyr Met Glu Asp Val His Arg Ala Gly Gly Ile Phe  
 325 330 335  
 Ala Ile Leu Lys Glu Leu Asp Lys Ala Gly Lys Leu His Thr Asp Val  
 340 345 350

His Thr Ile His Ala Pro Thr Leu Lys Asp Ala Ile Glu Lys Trp Asp  
 355 360 365

Val Thr Asn Pro Glu Asn Thr His Ala Ile Glu Arg Phe Lys Ala Ala  
 370 375 380

Pro Gly Gly Val Arg Thr Thr Gln Ala Phe Ser Gln Asn Arg Met Trp  
 385 390 395 400

Lys Thr Leu Asp Leu Asp Arg Glu Lys Gly Cys Ile Arg Asp Val Ala  
 405 410 415

His Ala Tyr Ser Gln Asp Gly Gly Leu Ala Val Leu Phe Gly Asn Ile  
 420 425 430

Ala Glu Arg Gly Cys Val Val Lys Thr Ala Gly Val Asp Glu Ser Ile  
 435 440 445

Leu Lys Phe Thr Gly Arg Ala Arg Val Phe Glu Ser Gln Glu Asp Ala  
 450 455 460

Val Glu Gly Ile Leu Gly Asn Gln Ile Val Ala Gly Asp Ile Val Ile  
 465 470 475 480

Ile Arg Tyr Glu Gly Pro Lys Gly Gly Pro Gly Met Gln Glu Met Leu  
 485 490 495

Tyr Pro Thr Ser Tyr Leu Lys Ser Lys Gly Leu Gly Lys Ala Cys Ala  
 500 505 510

Leu Leu Thr Asp Gly Arg Phe Ser Gly Gly Thr Ser Gly Leu Ser Ile  
 515 520 525

Gly His Ala Ser Pro Glu Ala Ala Glu Gly Gly Ala Ile Gly Leu Val  
 530 535 540

His Glu Gly Asp Thr Val Glu Ile Asp Ile Pro Asn Arg Ser Ile Arg  
 545 550 555 560

Leu Val Ile Ser Asp Glu Glu Leu Ala Ala Arg Arg Ala Glu Met Glu  
 565 570 575

Ala Arg Gly Ser Lys Ala Trp Lys Pro Glu Asn Arg Asp Arg Tyr Val  
 580 585 590

Ser Ala Ala Leu Arg Ala Tyr Gly Ala Met Ala Thr Ser Ala Asp Lys  
 595 600 605

Gly Ala Val Arg Asp Val Ala Gln Ile Glu Arg  
 610 615

<210> 29

<211> 1725

<212> DNA

<213> Neisseria meningitidis

<220>

<221> CDS

<222> (1)..(1725)

<400> 29

atg cag cta tca ggc gcg caa atc ata gtg cag agt ctc aaa gcc gaa	48
Met Gln Leu Ser Gly Ala Gln Ile Ile Val Gln Ser Leu Lys Ala Glu	
1 5 10 15	
ggg gtc gag tac gtt ttc ggt tat ccc ggc ggt gcg gtt atc gaa atc	96
Gly Val Glu Tyr Val Phe Gly Tyr Pro Gly Gly Ala Val Ile Glu Ile	
20 25 30	
tac gat gcc ctt ttc caa ctc aat aaa ttc aag cac att ctg acc cgt	144
Tyr Asp Ala Leu Phe Gln Leu Asn Lys Phe Lys His Ile Leu Thr Arg	
35 40 45	
cac gag cag gcg gca gta cac gcg gca gat gcg tat gcg cgc gtc agc	192
His Glu Gln Ala Ala Val His Ala Ala Asp Ala Tyr Ala Arg Val Ser	
50 55 60	
ggg aag gtg ggc gtg gca ttg gtt aca tcc ggc ccg ggc gtt acc aat	240
Gly Lys Val Gly Val Ala Leu Val Thr Ser Gly Pro Gly Val Thr Asn	
65 70 75 80	
gca ctg acc ggt att gct act gcc tat acg gat tcg att ccg atg gtg	288
Ala Leu Thr Gly Ile Ala Thr Ala Tyr Thr Asp Ser Ile Pro Met Val	
85 90 95	
gtc atc agc ggg cag gta ggc aat tcc ctg att ggt acg gat gcg ttc	336
Val Ile Ser Gly Gln Val Gly Asn Ser Leu Ile Gly Thr Asp Ala Phe	
100 105 110	
caa gaa gtt gat acg gtg ggt att acc cgt ccg tgc gtc aaa cac aat	384
Gln Glu Val Asp Thr Val Gly Ile Thr Arg Pro Cys Val Lys His Asn	
115 120 125	



ttc ctg gtt acg gac atc aat gag ttg gcg gaa acc att aaa aag gcg	432
Phe Leu Val Thr Asp Ile Asn Glu Leu Ala Glu Thr Ile Lys Lys Ala	
130 135 140	
ttc caa att gcc gca agc ggc cga ccg ggg ccc gtg gtg gtt gat gtc	480
Phe Gln Ile Ala Ala Ser Gly Arg Pro Gly Pro Val Val Val Asp Val	
145 150 155 160	
ccg aaa gat gtt acg cag gcg atg gcg aaa ttc agc tat cct cag gaa	528
Pro Lys Asp Val Thr Gln Ala Met Ala Lys Phe Ser Tyr Pro Gln Glu	
165 170 175	
gac att ttt atc cgt tgc tat caa ccg gtt gtt caa ggg cat atc ggt	576
Asp Ile Phe Ile Arg Ser Tyr Gln Pro Val Val Gln Gly His Ile Gly	
180 185 190	
cag att aaa aag gcc gtg cag atg ttg gca tct gcc aaa cgt ccg gtc	624
Gln Ile Lys Lys Ala Val Gln Met Leu Ala Ser Ala Lys Arg Pro Val	
195 200 205	
gtc tat ttt ggc ggc ggc gtg gtg ttg ggt aat gct tct gaa gag ctg	672
Val Tyr Phe Gly Gly Gly Val Val Leu Gly Asn Ala Ser Glu Glu Leu	
210 215 220	
acc cga ttt gtc cga atg acg ggt gct ccg tgc acg ggt acg ctg atg	720
Thr Arg Phe Val Arg Met Thr Gly Ala Pro Cys Thr Gly Thr Leu Met	
225 230 235 240	
ggc ttg ggc gct tat cct tcc ggc gac cgc caa ttc ctc ggt atg ctc	768
Gly Leu Gly Ala Tyr Pro Ser Gly Asp Arg Gln Phe Leu Gly Met Leu	
245 250 255	
ggt atg cac ggt act tac gag gca aac ctt gcc atg cag aat gcg gat	816
Gly Met His Gly Thr Tyr Glu Ala Asn Leu Ala Met Gln Asn Ala Asp	
260 265 270	
gtc gtt ctt gcc gta ggt gcg cgt ttt gac gac cgt gtg gtt tcc gta	864
Val Val Leu Ala Val Gly Ala Arg Phe Asp Asp Arg Val Val Ser Val	
275 280 285	
ccg tcc aaa ttt ttc gag aag gcg aag aag gtt atc cat atc gat gtc	912
Pro Ser Lys Phe Phe Glu Lys Ala Lys Lys Val Ile His Ile Asp Val	
290 295 300	
gat cct tcc agc atc gcc aaa cgc gtg aag gcg gac att ccg att gtc	960
Asp Pro Ser Ser Ile Ala Lys Arg Val Lys Ala Asp Ile Pro Ile Val	
305 310 315 320	

ggc gac gtg aaa aac gtt ttg tcc gag atg gtt gcg ctg tgg caa aaa	1008
Gly Asp Val Lys Asn Val Leu Ser Glu Met Val Ala Leu Trp Gln Lys	
325 330 335	
caa gag tcc gtg ccg tct gaa gat gct ttg ggc aaa tgg tgg aaa acc	1056
Gln Glu Ser Val Pro Ser Glu Asp Ala Leu Gly Lys Trp Trp Lys Thr	
340 345 350	
ata gag gaa tgg cgt tcc cgc gat tgc ttg tgg ttt gac aac ggc agc	1104
Ile Glu Glu Trp Arg Ser Arg Asp Cys Leu Trp Phe Asp Asn Gly Ser	
355 360 365	
gaa att atc aag cca caa tat gtg att cag aag ctt gcc gag att acc	1152
Glu Ile Ile Lys Pro Gln Tyr Val Ile Gln Lys Leu Ala Glu Ile Thr	
370 375 380	
ggc aat tcg gca atc atc aca tcg gat gta ggg cag cat caa atg ttt	1200
Gly Asn Ser Ala Ile Ile Thr Ser Asp Val Gly Gln His Gln Met Phe	
385 390 395 400	
gcg gct caa tat tat ccc ttc gaa cgt ccg cgc caa tgg ctc aac tcc	1248
Ala Ala Gln Tyr Tyr Pro Phe Glu Arg Pro Arg Gln Trp Leu Asn Ser	
405 410 415	
ggc ggt ttg ggt acg atg ggc gtt ggt ctg cct tat gcg att ggt gca	1296
Gly Gly Leu Gly Thr Met Gly Val Gly Leu Pro Tyr Ala Ile Gly Ala	
420 425 430	
aaa ctt gcc gcc ccg gat caa gac gta ttc tgt att acc ggc gac ggc	1344
Lys Leu Ala Ala Pro Asp Gln Asp Val Phe Cys Ile Thr Gly Asp Gly	
435 440 445	
tcg atc cag atg aac atc caa gag ctg tcc acc tgt ttc caa tat cgg	1392
Ser Ile Gln Met Asn Ile Gln Glu Leu Ser Thr Cys Phe Gln Tyr Arg	
450 455 460	
att ccg gtt aac gtc att acg ctg aac aac ggt tat ctc ggt atg gta	1440
Ile Pro Val Asn Val Ile Thr Leu Asn Asn Gly Tyr Leu Gly Met Val	
465 470 475 480	
cgc cag tgg cag gaa ata tat tac ggc gga cga gag tcg gaa acc tat	1488
Arg Gln Trp Gln Glu Ile Tyr Tyr Gly Gly Arg Glu Ser Glu Thr Tyr	
485 490 495	
ttc gat tct ttg ccc gat ttc gtc aaa ctt gcc gag gca tac ggc cat	1536
Phe Asp Ser Leu Pro Asp Phe Val Lys Leu Ala Glu Ala Tyr Gly His	
500 505 510	

atc ggt atc cgc gtg gac aag aag tct gat gtg gaa ggt gcg ttg ttg 1584  
 Ile Gly Ile Arg Val Asp Lys Lys Ser Asp Val Glu Gly Ala Leu Leu  
                   515                                  520                                  525

gaa gca ttg aac caa aaa gac agg ctg gtg ttt atc gac ttc ctg acc 1632  
 Glu Ala Leu Asn Gln Lys Asp Arg Leu Val Phe Ile Asp Phe Leu Thr  
                   530                                  535                                  540

gac cag aaa cag aat gtg atg ccc atg gtc ggc aac ggc aaa ggt ttg 1680  
 Asp Gln Lys Gln Asn Val Met Pro Met Val Gly Asn Gly Lys Gly Leu  
 545                                  550                                  555                                  560

gac gaa atg gta ctt ccg ccg cat atg cgt gcg gac gga aag gcg 1725  
 Asp Glu Met Val Leu Pro Pro His Met Arg Ala Asp Gly Lys Ala  
                                   565                                  570                                  575

<210> 30

<211> 575

<212> PRT

<213> Neisseria meningitidis

<400> 30

Met Gln Leu Ser Gly Ala Gln Ile Ile Val Gln Ser Leu Lys Ala Glu  
           1                                  5                                  10                                  15

Gly Val Glu Tyr Val Phe Gly Tyr Pro Gly Gly Ala Val Ile Glu Ile  
                                   20                                  25                                  30

Tyr Asp Ala Leu Phe Gln Leu Asn Lys Phe Lys His Ile Leu Thr Arg  
                   35                                  40                                  45

His Glu Gln Ala Ala Val His Ala Ala Asp Ala Tyr Ala Arg Val Ser  
           50                                  55                                  60

Gly Lys Val Gly Val Ala Leu Val Thr Ser Gly Pro Gly Val Thr Asn  
           65                                  70                                  75                                  80

Ala Leu Thr Gly Ile Ala Thr Ala Tyr Thr Asp Ser Ile Pro Met Val  
                                   85                                  90                                  95

Val Ile Ser Gly Gln Val Gly Asn Ser Leu Ile Gly Thr Asp Ala Phe  
                   100                                  105                                  110

Gln Glu Val Asp Thr Val Gly Ile Thr Arg Pro Cys Val Lys His Asn  
                   115                                  120                                  125

Phe Leu Val Thr Asp Ile Asn Glu Leu Ala Glu Thr Ile Lys Lys Ala

130	135	140
Phe Gln Ile Ala Ala Ser Gly Arg Pro Gly Pro Val Val Val Asp Val		
145	150	155 160
Pro Lys Asp Val Thr Gln Ala Met Ala Lys Phe Ser Tyr Pro Gln Glu		
	165	170 175
Asp Ile Phe Ile Arg Ser Tyr Gln Pro Val Val Gln Gly His Ile Gly		
	180	185 190
Gln Ile Lys Lys Ala Val Gln Met Leu Ala Ser Ala Lys Arg Pro Val		
	195	200 205
Val Tyr Phe Gly Gly Gly Val Val Leu Gly Asn Ala Ser Glu Glu Leu		
	210	215 220
Thr Arg Phe Val Arg Met Thr Gly Ala Pro Cys Thr Gly Thr Leu Met		
	225	230 235 240
Gly Leu Gly Ala Tyr Pro Ser Gly Asp Arg Gln Phe Leu Gly Met Leu		
	245	250 255
Gly Met His Gly Thr Tyr Glu Ala Asn Leu Ala Met Gln Asn Ala Asp		
	260	265 270
Val Val Leu Ala Val Gly Ala Arg Phe Asp Asp Arg Val Val Ser Val		
	275	280 285
Pro Ser Lys Phe Phe Glu Lys Ala Lys Lys Val Ile His Ile Asp Val		
	290	295 300
Asp Pro Ser Ser Ile Ala Lys Arg Val Lys Ala Asp Ile Pro Ile Val		
	305	310 315 320
Gly Asp Val Lys Asn Val Leu Ser Glu Met Val Ala Leu Trp Gln Lys		
	325	330 335
Gln Glu Ser Val Pro Ser Glu Asp Ala Leu Gly Lys Trp Trp Lys Thr		
	340	345 350
Ile Glu Glu Trp Arg Ser Arg Asp Cys Leu Trp Phe Asp Asn Gly Ser		
	355	360 365
Glu Ile Ile Lys Pro Gln Tyr Val Ile Gln Lys Leu Ala Glu Ile Thr		
	370	375 380
Gly Asn Ser Ala Ile Ile Thr Ser Asp Val Gly Gln His Gln Met Phe		

385		390		395		400
Ala Ala Gln Tyr Tyr Pro Phe Glu Arg Pro Arg Gln Trp Leu Asn Ser						
	405		410		415	
Gly Gly Leu Gly Thr Met Gly Val Gly Leu Pro Tyr Ala Ile Gly Ala						
	420		425		430	
Lys Leu Ala Ala Pro Asp Gln Asp Val Phe Cys Ile Thr Gly Asp Gly						
	435		440		445	
Ser Ile Gln Met Asn Ile Gln Glu Leu Ser Thr Cys Phe Gln Tyr Arg						
	450		455		460	
Ile Pro Val Asn Val Ile Thr Leu Asn Asn Gly Tyr Leu Gly Met Val						
	465		470		475	
Arg Gln Trp Gln Glu Ile Tyr Tyr Gly Gly Arg Glu Ser Glu Thr Tyr						
	485		490		495	
Phe Asp Ser Leu Pro Asp Phe Val Lys Leu Ala Glu Ala Tyr Gly His						
	500		505		510	
Ile Gly Ile Arg Val Asp Lys Lys Ser Asp Val Glu Gly Ala Leu Leu						
	515		520		525	
Glu Ala Leu Asn Gln Lys Asp Arg Leu Val Phe Ile Asp Phe Leu Thr						
	530		535		540	
Asp Gln Lys Gln Asn Val Met Pro Met Val Gly Asn Gly Lys Gly Leu						
	545		550		555	
Asp Glu Met Val Leu Pro Pro His Met Arg Ala Asp Gly Lys Ala						
	565		570		575	

&lt;210&gt; 31

&lt;211&gt; 651

&lt;212&gt; DNA

&lt;213&gt; Neisseria meningitidis

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(651)

&lt;400&gt; 31

atg ttt tcc gta ccg cgt tcc ttt ttg ccg ggc gtt ttc gta ctt gcc 48

Met	Phe	Ser	Val	Pro	Arg	Ser	Phe	Leu	Pro	Gly	Val	Phe	Val	Leu	Ala	
1				5					10					15		
gcg	ctt	gcc	gcc	tgc	aaa	cct	caa	gac	aac	agt	gcg	gcg	caa	gtc	gct	96
Ala	Leu	Ala	Ala	Cys	Lys	Pro	Gln	Asp	Asn	Ser	Ala	Ala	Gln	Val	Ala	
			20					25					30			
tct	tca	agt	gca	tcc	gcg	tcg	gct	gcg	gaa	aat	gcg	gca	aag	ccg	caa	144
Ser	Ser	Ser	Ala	Ser	Ala	Ser	Ala	Ala	Glu	Asn	Ala	Ala	Lys	Pro	Gln	
			35				40					45				
acg	cg	ggt	acg	gat	atg	cgt	aag	gaa	gac	atc	ggc	ggc	gat	ttc	acg	192
Thr	Arg	Gly	Thr	Asp	Met	Arg	Lys	Glu	Asp	Ile	Gly	Gly	Asp	Phe	Thr	
	50					55					60					
ctg	acc	gac	ggc	gaa	ggc	aag	cct	ttc	aac	ctg	agc	gat	ttg	aaa	ggc	240
Leu	Thr	Asp	Gly	Glu	Gly	Lys	Pro	Phe	Asn	Leu	Ser	Asp	Leu	Lys	Gly	
65					70				75					80		
aag	gtc	gtg	att	ctg	tct	ttc	ggc	ttt	acg	cac	tgt	ccc	gat	gtc	tgc	288
Lys	Val	Val	Ile	Leu	Ser	Phe	Gly	Phe	Thr	His	Cys	Pro	Asp	Val	Cys	
				85				90					95			
ccg	aca	gag	ctt	ttg	acg	tac	agc	gac	acg	ttg	aag	cag	ttg	ggc	ggg	336
Pro	Thr	Glu	Leu	Leu	Thr	Tyr	Ser	Asp	Thr	Leu	Lys	Gln	Leu	Gly	Gly	
			100					105					110			
cag	gct	aag	gac	gtg	aaa	gtg	gtg	ttc	gtc	agc	atc	gat	ccg	gaa	cg	384
Gln	Ala	Lys	Asp	Val	Lys	Val	Val	Phe	Val	Ser	Ile	Asp	Pro	Glu	Arg	
		115					120				125					
gac	acg	cct	gaa	atc	atc	ggc	aag	tat	gcc	aaa	cag	ttc	aat	ccg	gac	432
Asp	Thr	Pro	Glu	Ile	Ile	Gly	Lys	Tyr	Ala	Lys	Gln	Phe	Asn	Pro	Asp	
	130					135					140					
ttt	atc	ggt	ctg	acg	gca	acg	ggc	gac	caa	aac	ctg	ccg	gtc	atc	aag	480
Phe	Ile	Gly	Leu	Thr	Ala	Thr	Gly	Asp	Gln	Asn	Leu	Pro	Val	Ile	Lys	
145					150					155				160		
cag	caa	tac	cg	gtg	gtt	tct	gcc	aaa	gtc	aat	caa	aaa	gac	gac	agc	528
Gln	Gln	Tyr	Arg	Val	Val	Ser	Ala	Lys	Val	Asn	Gln	Lys	Asp	Asp	Ser	
				165				170					175			
gaa	aac	tat	ttg	gtc	gac	cac	tct	tcc	ggt	gcg	tat	ctc	atc	gac	aaa	576
Glu	Asn	Tyr	Leu	Val	Asp	His	Ser	Ser	Gly	Ala	Tyr	Leu	Ile	Asp	Lys	
			180					185					190			
aac	ggt	gag	gtt	gcc	att	ttc	tcg	cct	tac	gga	agc	gag	ccg	gaa	acg	624

Asn Gly Glu Val Ala Ile Phe Ser Pro Tyr Gly Ser Glu Pro Glu Thr  
 195 200 205

att gct gcc gat gta agg acc ctg ctc 651  
 Ile Ala Ala Asp Val Arg Thr Leu Leu  
 210 215

<210> 32

<211> 217

<212> PRT

<213> Neisseria meningitidis

<400> 32

Met Phe Ser Val Pro Arg Ser Phe Leu Pro Gly Val Phe Val Leu Ala  
 1 5 10 15

Ala Leu Ala Ala Cys Lys Pro Gln Asp Asn Ser Ala Ala Gln Val Ala  
 20 25 30

Ser Ser Ser Ala Ser Ala Ser Ala Ala Glu Asn Ala Ala Lys Pro Gln  
 35 40 45

Thr Arg Gly Thr Asp Met Arg Lys Glu Asp Ile Gly Gly Asp Phe Thr  
 50 55 60

Leu Thr Asp Gly Glu Gly Lys Pro Phe Asn Leu Ser Asp Leu Lys Gly  
 65 70 75 80

Lys Val Val Ile Leu Ser Phe Gly Phe Thr His Cys Pro Asp Val Cys  
 85 90 95

Pro Thr Glu Leu Leu Thr Tyr Ser Asp Thr Leu Lys Gln Leu Gly Gly  
 100 105 110

Gln Ala Lys Asp Val Lys Val Val Phe Val Ser Ile Asp Pro Glu Arg  
 115 120 125

Asp Thr Pro Glu Ile Ile Gly Lys Tyr Ala Lys Gln Phe Asn Pro Asp  
 130 135 140

Phe Ile Gly Leu Thr Ala Thr Gly Asp Gln Asn Leu Pro Val Ile Lys  
 145 150 155 160

Gln Gln Tyr Arg Val Val Ser Ala Lys Val Asn Gln Lys Asp Asp Ser  
 165 170 175

Glu Asn Tyr Leu Val Asp His Ser Ser Gly Ala Tyr Leu Ile Asp Lys

180	185	190
Asn Gly Glu Val Ala Ile Phe Ser Pro Tyr Gly Ser Glu Pro Glu Thr		
195	200	205
Ile Ala Ala Asp Val Arg Thr Leu Leu		
210	215	

<210> 33  
 <211> 330  
 <212> DNA  
 <213> Neisseria meningitidis

<220>  
 <221> CDS  
 <222> (1)..(330)

<400> 33

ttg ccg ctg ctt tgt tgt ctt tgg ttt tgg cag cct gcg gcg gtg aaa	48
Leu Pro Leu Leu Cys Cys Leu Trp Phe Trp Gln Pro Ala Ala Val Lys	
1 5 10 15	
aag ccg ctg aag ctc ccg ctg ctg aag cac ctg ccg ccg aag ctc ccg	96
Lys Pro Leu Lys Leu Pro Leu Leu Lys His Leu Pro Pro Lys Leu Pro	
20 25 30	
cta ctg aag cac ctg ccg ccg aag ctc ccg ctg ctg aag cac ctg ccg	144
Leu Leu Lys His Leu Pro Pro Lys Leu Pro Leu Leu Lys His Leu Pro	
35 40 45	
ccg aag ctc ctg cta ctg aag cac ctg ccg ccg aag ctc ccg ctg ctg	192
Pro Lys Leu Leu Leu Leu Lys His Leu Pro Pro Lys Leu Pro Leu Leu	
50 55 60	
aag ctg ccg cta ccg aag cac ctg ccg ctg aag ctg ccg cta ccg aag	240
Lys Leu Pro Leu Pro Lys His Leu Pro Leu Lys Leu Pro Leu Pro Lys	
65 70 75 80	
cac ctg ccg ctg aag ctc ctg ctg ccg aag ctg caa aat aag cat ttt	288
His Leu Pro Leu Lys Leu Leu Leu Pro Lys Leu Gln Asn Lys His Phe	
85 90 95	
ccg ctt gca aaa aag cag gat acg ttc agt atc ctg ctt ttt	330
Pro Leu Ala Lys Lys Gln Asp Thr Phe Ser Ile Leu Leu Phe	
100 105 110	



&lt;210&gt; 34

&lt;211&gt; 110

&lt;212&gt; PRT

&lt;213&gt; Neisseria meningitidis

&lt;400&gt; 34

Leu Pro Leu Leu Cys Cys Leu Trp Phe Trp Gln Pro Ala Ala Val Lys  
 1 5 10 15

Lys Pro Leu Lys Leu Pro Leu Leu Lys His Leu Pro Pro Lys Leu Pro  
 20 25 30

Leu Leu Lys His Leu Pro Pro Lys Leu Pro Leu Leu Lys His Leu Pro  
 35 40 45

Pro Lys Leu Leu Leu Leu Lys His Leu Pro Pro Lys Leu Pro Leu Leu  
 50 55 60

Lys Leu Pro Leu Pro Lys His Leu Pro Leu Lys Leu Pro Leu Pro Lys  
 65 70 75 80

His Leu Pro Leu Lys Leu Leu Leu Pro Lys Leu Gln Asn Lys His Phe  
 85 90 95

Pro Leu Ala Lys Lys Gln Asp Thr Phe Ser Ile Leu Leu Phe  
 100 105 110

&lt;210&gt; 35

&lt;211&gt; 2118

&lt;212&gt; DNA

&lt;213&gt; Neisseria meningitidis

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(2118)

&lt;400&gt; 35

atg ttc gac aaa cac gtt aag acc ttc caa tac ggt aat cag acc gtt 48  
 Met Phe Asp Lys His Val Lys Thr Phe Gln Tyr Gly Asn Gln Thr Val  
 1 5 10 15

act ttg gaa acc ggc gaa att gcc cgc caa gcc gcc gct gcc gtt aaa 96  
 Thr Leu Glu Thr Gly Glu Ile Ala Arg Gln Ala Ala Ala Ala Val Lys  
 20 25 30

gtc tct atg ggc gac acc gtg gtt ttg gtt gcc gtt acc acc aac aaa	144
Val Ser Met Gly Asp Thr Val Val Leu Val Ala Val Thr Thr Asn Lys	
35 40 45	
 gaa gtg aaa gaa ggc caa gac ttc ttc ccc ctg acc gtc gat tat ttg	192
Glu Val Lys Glu Gly Gln Asp Phe Phe Pro Leu Thr Val Asp Tyr Leu	
50 55 60	
 gaa cgc act tac gcc gca ggt aaa atc ccc ggc ggt ttc ttc aaa cgc	240
Glu Arg Thr Tyr Ala Ala Gly Lys Ile Pro Gly Gly Phe Phe Lys Arg	
65 70 75 80	
 gaa ggc aaa caa agc gaa aaa gaa atc ctg acc agc cgt ctg atc gac	288
Glu Gly Lys Gln Ser Glu Lys Glu Ile Leu Thr Ser Arg Leu Ile Asp	
85 90 95	
 cgc ccg att cgt ccg ctg ttc ccc gaa ggt ttc tac cac gac atc caa	336
Arg Pro Ile Arg Pro Leu Phe Pro Glu Gly Phe Tyr His Asp Ile Gln	
100 105 110	
 atc gta gcg atg gtc gtg tcc gtc gat ccc gaa atc gat tcc gac att	384
Ile Val Ala Met Val Val Ser Val Asp Pro Glu Ile Asp Ser Asp Ile	
115 120 125	
 cct gca atg ttg ggc gcg tct gcc gcg ctg gtg ttg agc ggc gta ccg	432
Pro Ala Met Leu Gly Ala Ser Ala Ala Leu Val Leu Ser Gly Val Pro	
130 135 140	
 ttt gcc ggt ccg att ggt gcg gca cgc gtg ggt tat ata aac ggc gtg	480
Phe Ala Gly Pro Ile Gly Ala Ala Arg Val Gly Tyr Ile Asn Gly Val	
145 150 155 160	
 tac gtt ttg aac ccg act aaa gcc gaa ttg gcg aaa tcg caa ttg gac	528
Tyr Val Leu Asn Pro Thr Lys Ala Glu Leu Ala Lys Ser Gln Leu Asp	
165 170 175	
 ttg gtg gtc gcc ggt act tca aaa gcc gtg ttg atg gtg gaa tcc gaa	576
Leu Val Val Ala Gly Thr Ser Lys Ala Val Leu Met Val Glu Ser Glu	
180 185 190	
 gcc aaa atc ctg ccc gaa gac gtg atg ctg ggc gcg gtg gtt tac ggc	624
Ala Lys Ile Leu Pro Glu Asp Val Met Leu Gly Ala Val Val Tyr Gly	
195 200 205	
 cac gat caa atg cag gtt gcc atc aat gca atc aat gaa ttt gcc gac	672
His Asp Gln Met Gln Val Ala Ile Asn Ala Ile Asn Glu Phe Ala Asp	
210 215 220	

gaa gtc aat ccg gaa ctt tgg gat tgg aaa gca cct gaa acc aat gag	720
Glu Val Asn Pro Glu Leu Trp Asp Trp Lys Ala Pro Glu Thr Asn Glu	
225 230 235 240	
gaa ctg gtt gcc aaa gtc cgc ggg att gcc ggc gaa acc att aaa gaa	768
Glu Leu Val Ala Lys Val Arg Gly Ile Ala Gly Glu Thr Ile Lys Glu	
245 250 255	
gcg ttc aaa atc cgt caa aaa caa gcg cgt tct gcc aaa ttg gac gaa	816
Ala Phe Lys Ile Arg Gln Lys Gln Ala Arg Ser Ala Lys Leu Asp Glu	
260 265 270	
gct tgg agt gcg gta aaa gaa gcc ttg att acc gaa gaa acc gac acg	864
Ala Trp Ser Ala Val Lys Glu Ala Leu Ile Thr Glu Glu Thr Asp Thr	
275 280 285	
ctg gca gcc aac gaa atc aaa ggc att ttc aaa cac ttg gaa gcc gat	912
Leu Ala Ala Asn Glu Ile Lys Gly Ile Phe Lys His Leu Glu Ala Asp	
290 295 300	
gtc gtc cgc agc caa att ttg gac ggc caa ccg cgc atc gac ggc cgc	960
Val Val Arg Ser Gln Ile Leu Asp Gly Gln Pro Arg Ile Asp Gly Arg	
305 310 315 320	
gac acc cgc acc gtc cgt ccg ctg aac atc caa acc ggc gta ttg ccg	1008
Asp Thr Arg Thr Val Arg Pro Leu Asn Ile Gln Thr Gly Val Leu Pro	
325 330 335	
cgc acg cac ggt tcc gca ttg ttt acc cgt ggc gaa acc caa gcc ctt	1056
Arg Thr His Gly Ser Ala Leu Phe Thr Arg Gly Glu Thr Gln Ala Leu	
340 345 350	
gcc gta gcg act ttg ggt act tcg cgc gac gag caa atc atc gac gcg	1104
Ala Val Ala Thr Leu Gly Thr Ser Arg Asp Glu Gln Ile Ile Asp Ala	
355 360 365	
ctg tcc ggc gaa tac acc gac cgc ttt atg ctg cac tac aac ttt ccg	1152
Leu Ser Gly Glu Tyr Thr Asp Arg Phe Met Leu His Tyr Asn Phe Pro	
370 375 380	
ccg tac tct acc ggc gaa gtg ggc cgc atg ggc gcg ccg aaa cgc cgt	1200
Pro Tyr Ser Thr Gly Glu Val Gly Arg Met Gly Ala Pro Lys Arg Arg	
385 390 395 400	
gaa atc ggt cac ggt cgt ttg gct aaa cgt gca ttg ttg gcc gta ttg	1248
Glu Ile Gly His Gly Arg Leu Ala Lys Arg Ala Leu Leu Ala Val Leu	
405 410 415	

ccg aaa cct gaa gat ttc agc tac acc atg cgc gtg gtc tcc gaa att	1296
Pro Lys Pro Glu Asp Phe Ser Tyr Thr Met Arg Val Val Ser Glu Ile	
420 425 430	
acc gaa tcc aac ggc tct tcc tct atg gct tcc gtc tgc ggc ggc tgc	1344
Thr Glu Ser Asn Gly Ser Ser Ser Met Ala Ser Val Cys Gly Gly Cys	
435 440 445	
ttg agc ctg ctg tcc gcc ggc gtg cct ttg aaa gca cac gtt gcc ggt	1392
Leu Ser Leu Leu Ser Ala Gly Val Pro Leu Lys Ala His Val Ala Gly	
450 455 460	
atc gcg atg ggt ctg att ctg gaa ggc aat aag ttt gcc gtc ctg acc	1440
Ile Ala Met Gly Leu Ile Leu Glu Gly Asn Lys Phe Ala Val Leu Thr	
465 470 475 480	
gac att ttg ggc gac gaa gac cac ttg ggc gat atg gac ttt aaa gtg	1488
Asp Ile Leu Gly Asp Glu Asp His Leu Gly Asp Met Asp Phe Lys Val	
485 490 495	
gct ggt acg acc gaa ggc gtt acc gcg ctg caa atg gac atc aaa atc	1536
Ala Gly Thr Thr Glu Gly Val Thr Ala Leu Gln Met Asp Ile Lys Ile	
500 505 510	
caa ggc att acc aaa gag att atg caa atc gct ttg gcg cag gcc aaa	1584
Gln Gly Ile Thr Lys Glu Ile Met Gln Ile Ala Leu Ala Gln Ala Lys	
515 520 525	
gaa gcg cgt ctg cac atc ttg gat cag atg aaa gcc gcc gtt gcg ggc	1632
Glu Ala Arg Leu His Ile Leu Asp Gln Met Lys Ala Ala Val Ala Gly	
530 535 540	
ccg caa gag ctg tcc gca cac gcg cca cgc ttg ttc acg atg aaa atc	1680
Pro Gln Glu Leu Ser Ala His Ala Pro Arg Leu Phe Thr Met Lys Ile	
545 550 555 560	
aac caa gac aaa atc cgc gaa gtt atc ggt aag ggc ggt gaa acc atc	1728
Asn Gln Asp Lys Ile Arg Glu Val Ile Gly Lys Gly Gly Glu Thr Ile	
565 570 575	
cgt gcg att acc gct gaa acc ggt acg gaa atc aat att gcc gaa gac	1776
Arg Ala Ile Thr Ala Glu Thr Gly Thr Glu Ile Asn Ile Ala Glu Asp	
580 585 590	
ggt acg att acc att gcc gca acc act caa gaa gcc ggc gat gcg gcg	1824
Gly Thr Ile Thr Ile Ala Ala Thr Thr Gln Glu Ala Gly Asp Ala Ala	
595 600 605	

aaa aaa cgc atc gag cag att act gcc gaa gtg gaa gtg ggc aaa gtg 1872  
 Lys Lys Arg Ile Glu Gln Ile Thr Ala Glu Val Glu Val Gly Lys Val  
 610 615 620

tac gaa ggc act gtg gtg aaa atc ctc gac aac aat gtc ggc gcg att 1920  
 Tyr Glu Gly Thr Val Val Lys Ile Leu Asp Asn Asn Val Gly Ala Ile  
 625 630 635 640

gtc agt gtg atg ccg ggc aaa gac ggt ttg gta cac atc agc caa atc 1968  
 Val Ser Val Met Pro Gly Lys Asp Gly Leu Val His Ile Ser Gln Ile  
 645 650 655

gcc cac gag cgc gta cgc aat gtc ggc gac tac ctg caa gtc ggt cag 2016  
 Ala His Glu Arg Val Arg Asn Val Gly Asp Tyr Leu Gln Val Gly Gln  
 660 665 670

gtg gtg aac gtg aaa gca ttg gaa gtg gac gac aga ggc cgt gtc cgt 2064  
 Val Val Asn Val Lys Ala Leu Glu Val Asp Asp Arg Gly Arg Val Arg  
 675 680 685

ctg tcc atc aaa gcc ctg ctg gac gcg cct gcc cgt gag gaa aat gcc 2112  
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 690 695 700

gcc gag 2118  
 Ala Glu  
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<212> PRT

<213> Neisseria meningitidis

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Thr Leu Glu Thr Gly Glu Ile Ala Arg Gln Ala Ala Ala Ala Val Lys  
 20 25 30

Val Ser Met Gly Asp Thr Val Val Leu Val Ala Val Thr Thr Asn Lys  
 35 40 45

Glu Val Lys Glu Gly Gln Asp Phe Phe Pro Leu Thr Val Asp Tyr Leu  
 50 55 60

Glu Arg Thr Tyr Ala Ala Gly Lys Ile Pro Gly Gly Phe Phe Lys Arg

65						70						75				80
Glu	Gly	Lys	Gln	Ser	Glu	Lys	Glu	Ile	Leu	Thr	Ser	Arg	Leu	Ile	Asp	
				85					90					95		
Arg	Pro	Ile	Arg	Pro	Leu	Phe	Pro	Glu	Gly	Phe	Tyr	His	Asp	Ile	Gln	
			100					105					110			
Ile	Val	Ala	Met	Val	Val	Ser	Val	Asp	Pro	Glu	Ile	Asp	Ser	Asp	Ile	
		115					120					125				
Pro	Ala	Met	Leu	Gly	Ala	Ser	Ala	Ala	Leu	Val	Leu	Ser	Gly	Val	Pro	
		130				135					140					
Phe	Ala	Gly	Pro	Ile	Gly	Ala	Ala	Arg	Val	Gly	Tyr	Ile	Asn	Gly	Val	
145					150					155				160		
Tyr	Val	Leu	Asn	Pro	Thr	Lys	Ala	Glu	Leu	Ala	Lys	Ser	Gln	Leu	Asp	
			165					170						175		
Leu	Val	Val	Ala	Gly	Thr	Ser	Lys	Ala	Val	Leu	Met	Val	Glu	Ser	Glu	
			180					185					190			
Ala	Lys	Ile	Leu	Pro	Glu	Asp	Val	Met	Leu	Gly	Ala	Val	Val	Tyr	Gly	
		195					200					205				
His	Asp	Gln	Met	Gln	Val	Ala	Ile	Asn	Ala	Ile	Asn	Glu	Phe	Ala	Asp	
	210					215					220					
Glu	Val	Asn	Pro	Glu	Leu	Trp	Asp	Trp	Lys	Ala	Pro	Glu	Thr	Asn	Glu	
225					230					235				240		
Glu	Leu	Val	Ala	Lys	Val	Arg	Gly	Ile	Ala	Gly	Glu	Thr	Ile	Lys	Glu	
				245					250					255		
Ala	Phe	Lys	Ile	Arg	Gln	Lys	Gln	Ala	Arg	Ser	Ala	Lys	Leu	Asp	Glu	
			260					265					270			
Ala	Trp	Ser	Ala	Val	Lys	Glu	Ala	Leu	Ile	Thr	Glu	Glu	Thr	Asp	Thr	
	275						280						285			
Leu	Ala	Ala	Asn	Glu	Ile	Lys	Gly	Ile	Phe	Lys	His	Leu	Glu	Ala	Asp	
	290					295					300					
Val	Val	Arg	Ser	Gln	Ile	Leu	Asp	Gly	Gln	Pro	Arg	Ile	Asp	Gly	Arg	
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Asp	Thr	Arg	Thr	Val	Arg	Pro	Leu	Asn	Ile	Gln	Thr	Gly	Val	Leu	Pro	

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Arg Thr His Gly Ser Ala Leu Phe Thr Arg Gly Glu Thr Gln Ala Leu					
	340		345		350
Ala Val Ala Thr Leu Gly Thr Ser Arg Asp Glu Gln Ile Ile Asp Ala					
	355		360		365
Leu Ser Gly Glu Tyr Thr Asp Arg Phe Met Leu His Tyr Asn Phe Pro					
	370		375		380
Pro Tyr Ser Thr Gly Glu Val Gly Arg Met Gly Ala Pro Lys Arg Arg					
	385		390		395
					400
Glu Ile Gly His Gly Arg Leu Ala Lys Arg Ala Leu Leu Ala Val Leu					
			410		415
Pro Lys Pro Glu Asp Phe Ser Tyr Thr Met Arg Val Val Ser Glu Ile					
	420		425		430
Thr Glu Ser Asn Gly Ser Ser Ser Met Ala Ser Val Cys Gly Gly Cys					
	435		440		445
Leu Ser Leu Leu Ser Ala Gly Val Pro Leu Lys Ala His Val Ala Gly					
	450		455		460
Ile Ala Met Gly Leu Ile Leu Glu Gly Asn Lys Phe Ala Val Leu Thr					
	465		470		475
					480
Asp Ile Leu Gly Asp Glu Asp His Leu Gly Asp Met Asp Phe Lys Val					
			485		490
					495
Ala Gly Thr Thr Glu Gly Val Thr Ala Leu Gln Met Asp Ile Lys Ile					
	500		505		510
Gln Gly Ile Thr Lys Glu Ile Met Gln Ile Ala Leu Ala Gln Ala Lys					
	515		520		525
Glu Ala Arg Leu His Ile Leu Asp Gln Met Lys Ala Ala Val Ala Gly					
	530		535		540
Pro Gln Glu Leu Ser Ala His Ala Pro Arg Leu Phe Thr Met Lys Ile					
	545		550		555
					560
Asn Gln Asp Lys Ile Arg Glu Val Ile Gly Lys Gly Gly Glu Thr Ile					
			565		570
					575
Arg Ala Ile Thr Ala Glu Thr Gly Thr Glu Ile Asn Ile Ala Glu Asp					

580 585 590  
 Gly Thr Ile Thr Ile Ala Ala Thr Thr Gln Glu Ala Gly Asp Ala Ala  
 595 600 605  
 Lys Lys Arg Ile Glu Gln Ile Thr Ala Glu Val Glu Val Gly Lys Val  
 610 615 620  
 Tyr Glu Gly Thr Val Val Lys Ile Leu Asp Asn Asn Val Gly Ala Ile  
 625 630 635 640  
 Val Ser Val Met Pro Gly Lys Asp Gly Leu Val His Ile Ser Gln Ile  
 645 650 655  
 Ala His Glu Arg Val Arg Asn Val Gly Asp Tyr Leu Gln Val Gly Gln  
 660 665 670  
 Val Val Asn Val Lys Ala Leu Glu Val Asp Asp Arg Gly Arg Val Arg  
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 Ala Glu  
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 ctt tcc gat ttc cgt gtt gaa aaa ctc ttg caa aaa gcc gcc gca ctc 96  
 Leu Ser Asp Phe Arg Val Glu Lys Leu Leu Gln Lys Ala Ala Ala Leu  
 20 25 30  
 ggt ctg ccc gaa gtc aaa tta agc agc gaa ttt tgg tat ttc gtc ggc 144  
 Gly Leu Pro Glu Val Lys Leu Ser Ser Glu Phe Trp Tyr Phe Val Gly



35	40	45	
agc gag aaa gca ctt gat gcc gcg act gtc gaa aaa ctg caa gcc ttg			192
Ser Glu Lys Ala Leu Asp Ala Ala Thr Val Glu Lys Leu Gln Ala Leu			
50	55	60	
ttg gcg gcg caa agc gtt gaa caa acg cca aaa gcg cgc gag ggc ttg			240
Leu Ala Ala Gln Ser Val Glu Gln Thr Pro Lys Ala Arg Glu Gly Leu			
65	70	75	80
cat ttg ttt ttg gtc acg ccc cgt ttg ggt acg att tcg ccg tgg gct			288
His Leu Phe Leu Val Thr Pro Arg Leu Gly Thr Ile Ser Pro Trp Ala			
	85	90	95
tcc aag gcg acc aat atc gcg gaa aac tgc ggt ttg gca ggc atc gaa			336
Ser Lys Ala Thr Asn Ile Ala Glu Asn Cys Gly Leu Ala Gly Ile Glu			
	100	105	110
cgc atc gag cgc ggc atg gcg gtg tgg ctg gaa ggt gcg ctt acc gat			384
Arg Ile Glu Arg Gly Met Ala Val Trp Leu Glu Gly Ala Leu Thr Asp			
	115	120	125
gaa cag caa cag caa tgg gcg gct ttg ctg cac gac cgc atg act gaa			432
Glu Gln Gln Gln Gln Trp Ala Ala Leu Leu His Asp Arg Met Thr Glu			
	130	135	140
tcc gtg ctg ccc gat ttt cag acg gca tcc aaa tta ttc cac cat ctc			480
Ser Val Leu Pro Asp Phe Gln Thr Ala Ser Lys Leu Phe His His Leu			
145	150	155	160
gaa tcc gaa acc ttt tcc acc gtc gat gtt ttg ggc ggc ggt aaa gag			528
Glu Ser Glu Thr Phe Ser Thr Val Asp Val Leu Gly Gly Gly Lys Glu			
	165	170	175
gct ttg gtc aaa gcc aat acc gaa atg ggt ttg gca ctc tcc gcc gac			576
Ala Leu Val Lys Ala Asn Thr Glu Met Gly Leu Ala Leu Ser Ala Asp			
	180	185	190
gaa atc gat tat ctg gtt gaa aac tat cag gct ttg cag cgc aat ccg			624
Glu Ile Asp Tyr Leu Val Glu Asn Tyr Gln Ala Leu Gln Arg Asn Pro			
	195	200	205
tct gat gtg gag ctg atg atg ttc gcg cag gca aac agc gaa cac tgc			672
Ser Asp Val Glu Leu Met Met Phe Ala Gln Ala Asn Ser Glu His Cys			
	210	215	220
cgc cac aaa atc ttc aac gcc gac ttc atc ctc aac ggc gaa aaa cag			720
Arg His Lys Ile Phe Asn Ala Asp Phe Ile Leu Asn Gly Glu Lys Gln			

225	230	235	240	
ccg aaa tcg ctc ttc ggt atg ata cgc gac acg cac aac gcg cat ccc				768
Pro Lys Ser Leu Phe Gly Met Ile Arg Asp Thr His Asn Ala His Pro				
	245	250	255	
gaa ggc aca gtc gtt gcc tac aaa gac aac tca tcc gtg atc gaa ggc				816
Glu Gly Thr Val Val Ala Tyr Lys Asp Asn Ser Ser Val Ile Glu Gly				
	260	265	270	
gca aaa gtc gaa cgt ttc tat cca aat gcg gca gaa aac caa ggc tac				864
Ala Lys Val Glu Arg Phe Tyr Pro Asn Ala Ala Glu Asn Gln Gly Tyr				
	275	280	285	
cgt ttc cac gag gaa gac acg cat atc atc atg aaa gtg gaa acg cac				912
Arg Phe His Glu Glu Asp Thr His Ile Ile Met Lys Val Glu Thr His				
	290	295	300	
aac cac ccg acc gcc atc gcg ccg ttt gcg ggc gcg gca acg ggc gcg				960
Asn His Pro Thr Ala Ile Ala Pro Phe Ala Gly Ala Ala Thr Gly Ala				
	305	310	315	320
ggc ggc gaa atc cgc gac gaa ggt gcg acg ggc aaa ggt tcg cgt ccg				1008
Gly Gly Glu Ile Arg Asp Glu Gly Ala Thr Gly Lys Gly Ser Arg Pro				
	325	330	335	
aaa gca ggc ttg acc ggc ttt acc gtg tcc aac ctc aac atc ccc ggc				1056
Lys Ala Gly Leu Thr Gly Phe Thr Val Ser Asn Leu Asn Ile Pro Gly				
	340	345	350	
ctc aaa cag ccg tgg gaa caa gat tac ggc aag ccg gaa cat att tcc				1104
Leu Lys Gln Pro Trp Glu Gln Asp Tyr Gly Lys Pro Glu His Ile Ser				
	355	360	365	
tcg ccg ctg gac att atg att gaa ggc ccc atc ggc ggc gcg gcg ttc				1152
Ser Pro Leu Asp Ile Met Ile Glu Gly Pro Ile Gly Gly Ala Ala Phe				
	370	375	380	
aac aac gaa ttc ggc cgc ccc aac ctc ttg ggc tac ttc cgc act ttt				1200
Asn Asn Glu Phe Gly Arg Pro Asn Leu Leu Gly Tyr Phe Arg Thr Phe				
	385	390	395	400
gaa gaa aaa ttt gac ggt cag gtt cgc ggc tac cac aaa ccg att atg				1248
Glu Glu Lys Phe Asp Gly Gln Val Arg Gly Tyr His Lys Pro Ile Met				
	405	410	415	
att gcc ggc ggc ttg ggc agc att cag gcg cag cag acg cat aaa gac				1296
Ile Ala Gly Gly Leu Gly Ser Ile Gln Ala Gln Gln Thr His Lys Asp				

420	425	430	
gaa atc ccc gaa ggc gcg ttg ctg atc caa ctg ggc ggc ccg ggt atg			1344
Glu Ile Pro Glu Gly Ala Leu Leu Ile Gln Leu Gly Gly Pro Gly Met			
435	440	445	
ctt atc ggc ttg ggc ggc ggc gcg gct tct tcg atg gat acc ggc aca			1392
Leu Ile Gly Leu Gly Gly Gly Ala Ala Ser Ser Met Asp Thr Gly Thr			
450	455	460	
aac gac gcg tct tta gac ttc aac tcc gta caa cgc ggc aac ccc gaa			1440
Asn Asp Ala Ser Leu Asp Phe Asn Ser Val Gln Arg Gly Asn Pro Glu			
465	470	475	480
atc gaa cgc cgc gcg cag gaa gtg atc gac cgc tgc tgg cag ctc ggc			1488
Ile Glu Arg Arg Ala Gln Glu Val Ile Asp Arg Cys Trp Gln Leu Gly			
485	490	495	
gac aaa aac ccg att atc tcc atc cac gac gtt ggc gcg ggc ggc ttg			1536
Asp Lys Asn Pro Ile Ile Ser Ile His Asp Val Gly Ala Gly Gly Leu			
500	505	510	
tcc aac gcc ttc ccc gaa ctc gtc aac gat gcc gga cgc ggc gcg gta			1584
Ser Asn Ala Phe Pro Glu Leu Val Asn Asp Ala Gly Arg Gly Ala Val			
515	520	525	
ttc aag ctg cgc gaa gtg ccg ctg gaa gaa cac ggt ctc aac ccg ctg			1632
Phe Lys Leu Arg Glu Val Pro Leu Glu Glu His Gly Leu Asn Pro Leu			
530	535	540	
caa atc tgg tgc aac gaa tcg caa gag cgt tat gta ttg tcg att ttg			1680
Gln Ile Trp Cys Asn Glu Ser Gln Glu Arg Tyr Val Leu Ser Ile Leu			
545	550	555	560
gaa aaa gat ttg gac atc ttc cgc tcc atc tgc gaa cgt gaa cgc tgc			1728
Glu Lys Asp Leu Asp Ile Phe Arg Ser Ile Cys Glu Arg Glu Arg Cys			
565	570	575	
ccg ttt gcg gta gtc ggt acg gcg acc gac gac ggc cat ttg aaa gta			1776
Pro Phe Ala Val Val Gly Thr Ala Thr Asp Asp Gly His Leu Lys Val			
580	585	590	
cgc gac gat ttg ttc tcc aac aac cct gtc gat ttg ccg ttg aac gtc			1824
Arg Asp Asp Leu Phe Ser Asn Asn Pro Val Asp Leu Pro Leu Asn Val			
595	600	605	
ttg ctc ggc aaa ccg ccc aaa acc acg cgt acc gac aaa acg gtt gcg			1872
Leu Leu Gly Lys Pro Pro Lys Thr Thr Arg Thr Asp Lys Thr Val Ala			

610	615	620	
ccg tcc aaa aaa ccg ttt cac gcg ggc gat atc gac att act gaa gcc			1920
Pro Ser Lys Lys Pro Phe His Ala Gly Asp Ile Asp Ile Thr Glu Ala			
625	630	635	640
gcc tac cgc gtt ctg cgc ctg cct gcc gta gcc gcc aaa aac ttc ctg			1968
Ala Tyr Arg Val Leu Arg Leu Pro Ala Val Ala Ala Lys Asn Phe Leu			
	645	650	655
att acc atc ggc gac cgc agc gtc ggc ggc atg acc cac cgc gac caa			2016
Ile Thr Ile Gly Asp Arg Ser Val Gly Gly Met Thr His Arg Asp Gln			
	660	665	670
atg gtc ggc aaa tac caa acc ccc gta gcc gac tgc gcc gtt acc atg			2064
Met Val Gly Lys Tyr Gln Thr Pro Val Ala Asp Cys Ala Val Thr Met			
	675	680	685
atg ggc ttc aac act tat cgc ggc gaa gcg atg agc atg ggc gaa aaa			2112
Met Gly Phe Asn Thr Tyr Arg Gly Glu Ala Met Ser Met Gly Glu Lys			
	690	695	700
ccg acc gtc gcc ctg ttt gac gcg cct gct tcg ggc aga atg tgc gtc			2160
Pro Thr Val Ala Leu Phe Asp Ala Pro Ala Ser Gly Arg Met Cys Val			
705	710	715	720
ggc gaa gcc atc acc aac atc gcg gca gcc aat atc ggc gac atc ggc			2208
Gly Glu Ala Ile Thr Asn Ile Ala Ala Ala Asn Ile Gly Asp Ile Gly			
	725	730	735
aac atc aaa ctc tcc gcc aac tgg atg gcg gcg tgc ggc aac gaa ggc			2256
Asn Ile Lys Leu Ser Ala Asn Trp Met Ala Ala Cys Gly Asn Glu Gly			
	740	745	750
gaa gac gaa aaa ctc tac cgc acc gtc gaa gcg gtt tcc aaa gcc tgt			2304
Glu Asp Glu Lys Leu Tyr Arg Thr Val Glu Ala Val Ser Lys Ala Cys			
	755	760	765
cag gca ttg gat ttg agc att ccc gtg ggc aaa gac agc ctg tcg atg			2352
Gln Ala Leu Asp Leu Ser Ile Pro Val Gly Lys Asp Ser Leu Ser Met			
	770	775	780
aaa acc gtg tgg cag gac ggc gaa gag aaa aaa tcc gtc gtt tcg ccg			2400
Lys Thr Val Trp Gln Asp Gly Glu Glu Lys Lys Ser Val Val Ser Pro			
785	790	795	800
ttg agc ctg att atc tcc gcg ttc gcg ccg gtt caa gac gta cgc aaa			2448
Leu Ser Leu Ile Ile Ser Ala Phe Ala Pro Val Gln Asp Val Arg Lys			

805										810					815					
acc	gtt	acg	ccc	gaa	ttg	aaa	aac	gtc	gag	gac	agc	gta	ttg	ctg	ttt	2496				
Thr	Val	Thr	Pro	Glu	Leu	Lys	Asn	Val	Glu	Asp	Ser	Val	Leu	Leu	Phe					
820					825					830										
gtc	gat	ttg	ggc	ttc	ggc	aaa	gcg	cgt	atg	ggc	ggc	tcg	gcg	ttt	ggt	2544				
Val	Asp	Leu	Gly	Phe	Gly	Lys	Ala	Arg	Met	Gly	Gly	Ser	Ala	Phe	Gly					
835					840					845										
cag	gtg	tac	aac	aat	atg	agc	ggc	gac	gcg	ccc	gat	ttg	gac	gat	aca	2592				
Gln	Val	Tyr	Asn	Asn	Met	Ser	Gly	Asp	Ala	Pro	Asp	Leu	Asp	Asp	Thr					
850					855					860										
agt	cgt	ctg	aaa	gcg	ttt	tac	aac	gtg	att	cag	cag	ctt	gtc	gcc	gaa	2640				
Ser	Arg	Leu	Lys	Ala	Phe	Tyr	Asn	Val	Ile	Gln	Gln	Leu	Val	Ala	Glu					
865					870					875					880					
gac	aaa	ctc	ttg	gcg	tat	cac	gac	cgc	agc	gac	ggc	ggc	ttg	ttt	gcc	2688				
Asp	Lys	Leu	Leu	Ala	Tyr	His	Asp	Arg	Ser	Asp	Gly	Gly	Leu	Phe	Ala					
885					890					895										
gtt	ttg	gta	gaa	atg	gcg	ttt	gca	ggg	cgg	tgc	ggc	ttg	gat	ata	gat	2736				
Val	Leu	Val	Glu	Met	Ala	Phe	Ala	Gly	Arg	Cys	Gly	Leu	Asp	Ile	Asp					
900					905					910										
tta	aat	tta	ttg	ctt	gca	caa	aca	ttt	att	acc	aac	cat	acc	gct	ctg	2784				
Leu	Asn	Leu	Leu	Leu	Ala	Gln	Thr	Phe	Ile	Thr	Asn	His	Thr	Ala	Leu					
915					920					925										
tct	caa	tca	ttg	cgg	act	gaa	gag	gta	aaa	gcg	ttg	gct	gaa	tgg	caa	2832				
Ser	Gln	Ser	Leu	Arg	Thr	Glu	Glu	Val	Lys	Ala	Leu	Ala	Glu	Trp	Gln					
930					935					940										
gaa	acc	att	gcc	cgc	aca	tta	ttt	aat	gaa	gag	ttg	ggt	gct	gtt	atc	2880				
Glu	Thr	Ile	Ala	Arg	Thr	Leu	Phe	Asn	Glu	Glu	Leu	Gly	Ala	Val	Ile					
945					950					955					960					
caa	gtt	aga	aaa	caa	gat	gtt	gcc	gat	att	atc	aat	tta	ttc	tat	caa	2928				
Gln	Val	Arg	Lys	Gln	Asp	Val	Ala	Asp	Ile	Ile	Asn	Leu	Phe	Tyr	Gln					
965					970					975										
caa	cag	ctg	cat	cat	aat	gtc	ttt	gaa	atc	ggt	acg	tta	act	gat	gag	2976				
Gln	Gln	Leu	His	His	Asn	Val	Phe	Glu	Ile	Gly	Thr	Leu	Thr	Asp	Glu					
980					985					990										
aac	acg	tta	atc	atc	cgc	gac	ggg	caa	acg	cac	ctt	att	tct	gac	aac	3024				
Asn	Thr	Leu	Ile	Ile	Arg	Asp	Gly	Gln	Thr	His	Leu	Ile	Ser	Asp	Asn					

995	1000	1005	
cta atc aaa ctg caa caa acc tgg caa gaa acc agc cat caa atc caa			3072
Leu Ile Lys Leu Gln Gln Thr Trp Gln Glu Thr Ser His Gln Ile Gln			
1010	1015	1020	
cgc ctg cgc gac aac cct gcc tgc gcc gac agc gag ttt gcc ctg att			3120
Arg Leu Arg Asp Asn Pro Ala Cys Ala Asp Ser Glu Phe Ala Leu Ile			
1025	1030	1035	1040
ggc gac aac gga cgc agc gca ttg ttt gcc aac ctg aaa ttc gac gtg			3168
Gly Asp Asn Gly Arg Ser Ala Leu Phe Ala Asn Leu Lys Phe Asp Val			
1045	1050	1055	
aac gaa gac atc gcc gcg ccg ttt atc aac agc ggc gcg aaa ccc aaa			3216
Asn Glu Asp Ile Ala Ala Pro Phe Ile Asn Ser Gly Ala Lys Pro Lys			
1060	1065	1070	
atc gcc atc ctg cgc gaa cag ggc gta aac ggg caa atc gaa atg gcc			3264
Ile Ala Ile Leu Arg Glu Gln Gly Val Asn Gly Gln Ile Glu Met Ala			
1075	1080	1085	
gcc gcc ttc acc cgt gcc ggt ttc gat gcc tac gac gtg cat atg tcc			3312
Ala Ala Phe Thr Arg Ala Gly Phe Asp Ala Tyr Asp Val His Met Ser			
1090	1095	1100	
gac ctg atg gca ggc cgc gtc cac ctt gcc gac ttc aaa atg ctg gcg			3360
Asp Leu Met Ala Gly Arg Val His Leu Ala Asp Phe Lys Met Leu Ala			
1105	1110	1115	1120
gcg tgc ggc ggc ttc agc tac ggc gac gta ctc ggc gcg ggc aaa ggc			3408
Ala Cys Gly Gly Phe Ser Tyr Gly Asp Val Leu Gly Ala Gly Lys Gly			
1125	1130	1135	
tgg gcg aaa tcc atc ctg ttc cac ccc gcc tta cgc gac cag ttc gcc			3456
Trp Ala Lys Ser Ile Leu Phe His Pro Ala Leu Arg Asp Gln Phe Ala			
1140	1145	1150	
gcc ttc ttc acc gac ccg aac acg ctg aca ttg ggc gtg tgc aac ggc			3504
Ala Phe Phe Thr Asp Pro Asn Thr Leu Thr Leu Gly Val Cys Asn Gly			
1155	1160	1165	
tgc cag atg gtc agc aac ctc gcc gaa atc atc ccc ggc acg gca ggc			3552
Cys Gln Met Val Ser Asn Leu Ala Glu Ile Ile Pro Gly Thr Ala Gly			
1170	1175	1180	
tgg ccg aag ttc aag cgc aac ctg agc gaa cag ttc gaa gcg cgc ctg			3600
Trp Pro Lys Phe Lys Arg Asn Leu Ser Glu Gln Phe Glu Ala Arg Leu			

1185	1190	1195	1200	
agc atg gtt cac gtc ccc aaa tca gcc tcc ctg att ctg aac gaa atg				3648
Ser Met Val His Val Pro Lys Ser Ala Ser Leu Ile Leu Asn Glu Met				
1205	1210	1215		
caa ggc tcc agc ctg ccc gtc gtc gtc agc cac ggc gaa ggc cgc gcc				3696
Gln Gly Ser Ser Leu Pro Val Val Val Ser His Gly Glu Gly Arg Ala				
1220	1225	1230		
gac ttc gcg ctt cac ggc ggc aac att tct gcc gat ttg ggc att gcg				3744
Asp Phe Ala Leu His Gly Gly Asn Ile Ser Ala Asp Leu Gly Ile Ala				
1235	1240	1245		
ttg caa tat gtg gac gga caa aac caa att acc caa acc tac ccg ctc				3792
Leu Gln Tyr Val Asp Gly Gln Asn Gln Ile Thr Gln Thr Tyr Pro Leu				
1250	1255	1260		
aac ccc aac ggc tcg ccg caa ggc atc gcc ggc gtg acc aac gcc gac				3840
Asn Pro Asn Gly Ser Pro Gln Gly Ile Ala Gly Val Thr Asn Ala Asp				
1265	1270	1275	1280	
ggc cgc gtt acc atc atg atg ccg cat cct gaa cgt gta tac cgc gcc				3888
Gly Arg Val Thr Ile Met Met Pro His Pro Glu Arg Val Tyr Arg Ala				
1285	1290	1295		
gca caa atg agc tgg aaa ccg gaa gac tgg acg gaa ttg tcc ggc tgg				3936
Ala Gln Met Ser Trp Lys Pro Glu Asp Trp Thr Glu Leu Ser Gly Trp				
1300	1305	1310		
tac cgc ctc ttc gcc ggc gca cgt aaa gcc ttg ggc				3972
Tyr Arg Leu Phe Ala Gly Ala Arg Lys Ala Leu Gly				
1315	1320			

&lt;210&gt; 38

&lt;211&gt; 1324

&lt;212&gt; PRT

&lt;213&gt; Neisseria meningitidis

&lt;400&gt; 38

Val	Ser	Arg	Ile	Met	Ser	Val	Val	Leu	Pro	Leu	Arg	Gly	Val	Thr	Ala
1					5					10				15	

Leu	Ser	Asp	Phe	Arg	Val	Glu	Lys	Leu	Leu	Gln	Lys	Ala	Ala	Ala	Leu
					20				25					30	

Gly	Leu	Pro	Glu	Val	Lys	Leu	Ser	Ser	Glu	Phe	Trp	Tyr	Phe	Val	Gly
-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----

35	40	45
Ser Glu Lys Ala Leu Asp Ala Ala Thr Val Glu Lys Leu Gln Ala Leu		
50	55	60
Leu Ala Ala Gln Ser Val Glu Gln Thr Pro Lys Ala Arg Glu Gly Leu		
65	70	75 80
His Leu Phe Leu Val Thr Pro Arg Leu Gly Thr Ile Ser Pro Trp Ala		
	85	90 95
Ser Lys Ala Thr Asn Ile Ala Glu Asn Cys Gly Leu Ala Gly Ile Glu		
	100	105 110
Arg Ile Glu Arg Gly Met Ala Val Trp Leu Glu Gly Ala Leu Thr Asp		
	115	120 125
Glu Gln Gln Gln Gln Trp Ala Ala Leu Leu His Asp Arg Met Thr Glu		
	130	135 140
Ser Val Leu Pro Asp Phe Gln Thr Ala Ser Lys Leu Phe His His Leu		
145	150	155 160
Glu Ser Glu Thr Phe Ser Thr Val Asp Val Leu Gly Gly Gly Lys Glu		
	165	170 175
Ala Leu Val Lys Ala Asn Thr Glu Met Gly Leu Ala Leu Ser Ala Asp		
	180	185 190
Glu Ile Asp Tyr Leu Val Glu Asn Tyr Gln Ala Leu Gln Arg Asn Pro		
	195	200 205
Ser Asp Val Glu Leu Met Met Phe Ala Gln Ala Asn Ser Glu His Cys		
	210	215 220
Arg His Lys Ile Phe Asn Ala Asp Phe Ile Leu Asn Gly Glu Lys Gln		
225	230	235 240
Pro Lys Ser Leu Phe Gly Met Ile Arg Asp Thr His Asn Ala His Pro		
	245	250 255
Glu Gly Thr Val Val Ala Tyr Lys Asp Asn Ser Ser Val Ile Glu Gly		
	260	265 270
Ala Lys Val Glu Arg Phe Tyr Pro Asn Ala Ala Glu Asn Gln Gly Tyr		
	275	280 285
Arg Phe His Glu Glu Asp Thr His Ile Ile Met Lys Val Glu Thr His		



290		295		300															
Asn	His	Pro	Thr	Ala	Ile	Ala	Pro	Phe	Ala	Gly	Ala	Ala	Thr	Gly	Ala				
305					310					315					320				
Gly	Gly	Glu	Ile	Arg	Asp	Glu	Gly	Ala	Thr	Gly	Lys	Gly	Ser	Arg	Pro				
				325					330						335				
Lys	Ala	Gly	Leu	Thr	Gly	Phe	Thr	Val	Ser	Asn	Leu	Asn	Ile	Pro	Gly				
			340					345						350					
Leu	Lys	Gln	Pro	Trp	Glu	Gln	Asp	Tyr	Gly	Lys	Pro	Glu	His	Ile	Ser				
		355					360						365						
Ser	Pro	Leu	Asp	Ile	Met	Ile	Glu	Gly	Pro	Ile	Gly	Gly	Ala	Ala	Phe				
		370				375					380								
Asn	Asn	Glu	Phe	Gly	Arg	Pro	Asn	Leu	Leu	Gly	Tyr	Phe	Arg	Thr	Phe				
385					390					395					400				
Glu	Glu	Lys	Phe	Asp	Gly	Gln	Val	Arg	Gly	Tyr	His	Lys	Pro	Ile	Met				
				405					410						415				
Ile	Ala	Gly	Gly	Leu	Gly	Ser	Ile	Gln	Ala	Gln	Gln	Thr	His	Lys	Asp				
			420					425						430					
Glu	Ile	Pro	Glu	Gly	Ala	Leu	Leu	Ile	Gln	Leu	Gly	Gly	Pro	Gly	Met				
		435					440					445							
Leu	Ile	Gly	Leu	Gly	Gly	Gly	Ala	Ala	Ser	Ser	Met	Asp	Thr	Gly	Thr				
		450				455					460								
Asn	Asp	Ala	Ser	Leu	Asp	Phe	Asn	Ser	Val	Gln	Arg	Gly	Asn	Pro	Glu				
465					470					475					480				
Ile	Glu	Arg	Arg	Ala	Gln	Glu	Val	Ile	Asp	Arg	Cys	Trp	Gln	Leu	Gly				
				485					490					495					
Asp	Lys	Asn	Pro	Ile	Ile	Ser	Ile	His	Asp	Val	Gly	Ala	Gly	Gly	Leu				
			500					505						510					
Ser	Asn	Ala	Phe	Pro	Glu	Leu	Val	Asn	Asp	Ala	Gly	Arg	Gly	Ala	Val				
		515					520					525							
Phe	Lys	Leu	Arg	Glu	Val	Pro	Leu	Glu	Glu	His	Gly	Leu	Asn	Pro	Leu				
		530					535				540								
Gln	Ile	Trp	Cys	Asn	Glu	Ser	Gln	Glu	Arg	Tyr	Val	Leu	Ser	Ile	Leu				

545		550		555		560
Glu Lys Asp Leu Asp Ile Phe Arg Ser Ile Cys Glu Arg Glu Arg Cys						
	565			570		575
Pro Phe Ala Val Val Gly Thr Ala Thr Asp Asp Gly His Leu Lys Val						
	580			585		590
Arg Asp Asp Leu Phe Ser Asn Asn Pro Val Asp Leu Pro Leu Asn Val						
	595			600		605
Leu Leu Gly Lys Pro Pro Lys Thr Thr Arg Thr Asp Lys Thr Val Ala						
	610			615		620
Pro Ser Lys Lys Pro Phe His Ala Gly Asp Ile Asp Ile Thr Glu Ala						
	625			630		635
						640
Ala Tyr Arg Val Leu Arg Leu Pro Ala Val Ala Ala Lys Asn Phe Leu						
	645			650		655
Ile Thr Ile Gly Asp Arg Ser Val Gly Gly Met Thr His Arg Asp Gln						
	660			665		670
Met Val Gly Lys Tyr Gln Thr Pro Val Ala Asp Cys Ala Val Thr Met						
	675			680		685
Met Gly Phe Asn Thr Tyr Arg Gly Glu Ala Met Ser Met Gly Glu Lys						
	690			695		700
Pro Thr Val Ala Leu Phe Asp Ala Pro Ala Ser Gly Arg Met Cys Val						
	705			710		715
						720
Gly Glu Ala Ile Thr Asn Ile Ala Ala Ala Asn Ile Gly Asp Ile Gly						
	725			730		735
Asn Ile Lys Leu Ser Ala Asn Trp Met Ala Ala Cys Gly Asn Glu Gly						
	740			745		750
Glu Asp Glu Lys Leu Tyr Arg Thr Val Glu Ala Val Ser Lys Ala Cys						
	755			760		765
Gln Ala Leu Asp Leu Ser Ile Pro Val Gly Lys Asp Ser Leu Ser Met						
	770			775		780
Lys Thr Val Trp Gln Asp Gly Glu Glu Lys Lys Ser Val Val Ser Pro						
	785			790		795
						800
Leu Ser Leu Ile Ile Ser Ala Phe Ala Pro Val Gln Asp Val Arg Lys						

				805					810							815
Thr	Val	Thr	Pro	Glu	Leu	Lys	Asn	Val	Glu	Asp	Ser	Val	Leu	Leu	Phe	
			820					825					830			
Val	Asp	Leu	Gly	Phe	Gly	Lys	Ala	Arg	Met	Gly	Gly	Ser	Ala	Phe	Gly	
		835					840					845				
Gln	Val	Tyr	Asn	Asn	Met	Ser	Gly	Asp	Ala	Pro	Asp	Leu	Asp	Asp	Thr	
	850					855					860					
Ser	Arg	Leu	Lys	Ala	Phe	Tyr	Asn	Val	Ile	Gln	Gln	Leu	Val	Ala	Glu	
865					870					875					880	
Asp	Lys	Leu	Leu	Ala	Tyr	His	Asp	Arg	Ser	Asp	Gly	Gly	Leu	Phe	Ala	
				885					890					895		
Val	Leu	Val	Glu	Met	Ala	Phe	Ala	Gly	Arg	Cys	Gly	Leu	Asp	Ile	Asp	
			900					905					910			
Leu	Asn	Leu	Leu	Leu	Ala	Gln	Thr	Phe	Ile	Thr	Asn	His	Thr	Ala	Leu	
	915						920					925				
Ser	Gln	Ser	Leu	Arg	Thr	Glu	Glu	Val	Lys	Ala	Leu	Ala	Glu	Trp	Gln	
	930					935					940					
Glu	Thr	Ile	Ala	Arg	Thr	Leu	Phe	Asn	Glu	Glu	Leu	Gly	Ala	Val	Ile	
945					950					955					960	
Gln	Val	Arg	Lys	Gln	Asp	Val	Ala	Asp	Ile	Ile	Asn	Leu	Phe	Tyr	Gln	
				965					970					975		
Gln	Gln	Leu	His	His	Asn	Val	Phe	Glu	Ile	Gly	Thr	Leu	Thr	Asp	Glu	
			980					985					990			
Asn	Thr	Leu	Ile	Ile	Arg	Asp	Gly	Gln	Thr	His	Leu	Ile	Ser	Asp	Asn	
		995					1000					1005				
Leu	Ile	Lys	Leu	Gln	Gln	Thr	Trp	Gln	Glu	Thr	Ser	His	Gln	Ile	Gln	
	1010					1015					1020					
Arg	Leu	Arg	Asp	Asn	Pro	Ala	Cys	Ala	Asp	Ser	Glu	Phe	Ala	Leu	Ile	
025					1030					1035					1040	
Gly	Asp	Asn	Gly	Arg	Ser	Ala	Leu	Phe	Ala	Asn	Leu	Lys	Phe	Asp	Val	
				1045					1050				1055			
Asn	Glu	Asp	Ile	Ala	Ala	Pro	Phe	Ile	Asn	Ser	Gly	Ala	Lys	Pro	Lys	

1060	1065	1070
Ile Ala Ile Leu Arg Glu Gln Gly Val Asn Gly Gln Ile Glu Met Ala		
1075	1080	1085
Ala Ala Phe Thr Arg Ala Gly Phe Asp Ala Tyr Asp Val His Met Ser		
1090	1095	1100
Asp Leu Met Ala Gly Arg Val His Leu Ala Asp Phe Lys Met Leu Ala		
1105	1110	1115
Ala Cys Gly Gly Phe Ser Tyr Gly Asp Val Leu Gly Ala Gly Lys Gly		
1125	1130	1135
Trp Ala Lys Ser Ile Leu Phe His Pro Ala Leu Arg Asp Gln Phe Ala		
1140	1145	1150
Ala Phe Phe Thr Asp Pro Asn Thr Leu Thr Leu Gly Val Cys Asn Gly		
1155	1160	1165
Cys Gln Met Val Ser Asn Leu Ala Glu Ile Ile Pro Gly Thr Ala Gly		
1170	1175	1180
Trp Pro Lys Phe Lys Arg Asn Leu Ser Glu Gln Phe Glu Ala Arg Leu		
1185	1190	1195
Ser Met Val His Val Pro Lys Ser Ala Ser Leu Ile Leu Asn Glu Met		
1205	1210	1215
Gln Gly Ser Ser Leu Pro Val Val Val Ser His Gly Glu Gly Arg Ala		
1220	1225	1230
Asp Phe Ala Leu His Gly Gly Asn Ile Ser Ala Asp Leu Gly Ile Ala		
1235	1240	1245
Leu Gln Tyr Val Asp Gly Gln Asn Gln Ile Thr Gln Thr Tyr Pro Leu		
1250	1255	1260
Asn Pro Asn Gly Ser Pro Gln Gly Ile Ala Gly Val Thr Asn Ala Asp		
1265	1270	1275
Gly Arg Val Thr Ile Met Met Pro His Pro Glu Arg Val Tyr Arg Ala		
1285	1290	1295
Ala Gln Met Ser Trp Lys Pro Glu Asp Trp Thr Glu Leu Ser Gly Trp		
1300	1305	1310
Tyr Arg Leu Phe Ala Gly Ala Arg Lys Ala Leu Gly		

1315

1320

&lt;210&gt; 39

&lt;211&gt; 471

&lt;212&gt; DNA

<213> *Neisseria meningitidis*

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1) .. (471)

&lt;400&gt; 39

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Met	Ser	Arg	Asn	Thr	Glu	Glu	Leu	Gln	Gly	Ile	Ser	Leu	Leu	Gly	Asn	
1				5					10					15		

cag	aaa	acc	cga	tat	ccg	acc	ggc	tac	gcg	cct	gaa	att	ctc	gaa	gca	96
Gln	Lys	Thr	Arg	Tyr	Pro	Thr	Gly	Tyr	Ala	Pro	Glu	Ile	Leu	Glu	Ala	
			20				25						30			

ttc	gac	aac	aaa	cat	ccc	gac	aac	gac	tat	ttc	gtc	aaa	ttc	gtc	tgc	144
Phe	Asp	Asn	Lys	His	Pro	Asp	Asn	Asp	Tyr	Phe	Val	Lys	Phe	Val	Cys	
		35					40					45				

cca	gag	ttc	acc	agc	ctc	tgc	ccc	atg	acc	ggg	cag	ccc	gac	ttc	gcc	192
Pro	Glu	Phe	Thr	Ser	Leu	Cys	Pro	Met	Thr	Gly-Gln	Pro	Asp	Phe	Ala		
	50					55				60						

acc	atc	tac	atc	cgc	tac	att	ccg	cac	atc	aaa	atg	gtg	gaa	agc	aaa	240
Thr	Ile	Tyr	Ile	Arg	Tyr	Ile	Pro	His	Ile	Lys	Met	Val	Glu	Ser	Lys	
65				70					75					80		

tcc	ctg	aaa	ctc	tac	ctc	ttc	agc	ttc	cgc	aac	cac	ggc	gat	ttt	cat	288
Ser	Leu	Lys	Leu	Tyr	Leu	Phe	Ser	Phe	Arg	Asn	His	Gly	Asp	Phe	His	
			85					90					95			

gaa	gac	tgc	gtc	aac	atc	atc	atg	aaa	gac	ctc	att	gcc	ctg	atg	gat	336
Glu	Asp	Cys	Val	Asn	Ile	Ile	Met	Lys	Asp	Leu	Ile	Ala	Leu	Met	Asp	
		100					105					110				

ccg	aaa	tac	atc	gaa	gta	ttc	ggc	gag	ttc	aca	ccg	cgc	ggc	ggc	atc	384
Pro	Lys	Tyr	Ile	Glu	Val	Phe	Gly	Glu	Phe	Thr	Pro	Arg	Gly	Gly	Ile	
		115				120					125					

gcc	att	cat	cct	ttc	gcc	aat	tac	ggc	aaa	gca	ggc	acc	gag	ttt	gaa	432
Ala	Ile	His	Pro	Phe	Ala	Asn	Tyr	Gly	Lys	Ala	Gly	Thr	Glu	Phe	Glu	

130 135 140 471  
gca ttg gcg cgt aaa cgc ctg ttt gag cac gac gca caa  
Ala Leu Ala Arg Lys Arg Leu Phe Glu His Asp Ala Gln  
145 150 155

<210> 40  
<211> 157  
<212> PRT  
<213> *Neisseria meningitidis*

<400> 40  
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Gln Lys Thr Arg Tyr Pro Thr Gly Tyr Ala Pro Glu Ile Leu Glu Ala  
20 25 30

Phe Asp Asn Lys His Pro Asp Asn Asp Tyr Phe Val Lys Phe Val Cys  
35 40 45

Pro Glu Phe Thr Ser Leu Cys Pro Met Thr Gly Gln Pro Asp Phe Ala  
50 55 60

Thr Ile Tyr Ile Arg Tyr Ile Pro His Ile Lys Met Val Glu Ser Lys  
65 70 75 80

Ser Leu Lys Leu Tyr Leu Phe Ser Phe Arg Asn His Gly Asp Phe His  
85 90 95

Glu Asp Cys Val Asn Ile Ile Met Lys Asp Leu Ile Ala Leu Met Asp  
100 105 110

Pro Lys Tyr Ile Glu Val Phe Gly Glu Phe Thr Pro Arg Gly Gly Ile  
115 120 125

Ala Ile His Pro Phe Ala Asn Tyr Gly Lys Ala Gly Thr Glu Phe Glu  
130 135 140

Ala Leu Ala Arg Lys Arg Leu Phe Glu His Asp Ala Gln  
145 150 155

<210> 41  
<211> 504  
<212> DNA

<213> *Neisseria meningitidis*

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(504)

&lt;400&gt; 41

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atg ccc cta cta gac agt ttc aaa gtc gat cac acc cgt atg cat gcc      48
Met Pro Leu Leu Asp Ser Phe Lys Val Asp His Thr Arg Met His Ala
   1                   5                   10                   15

ccc gcc gta cgc gtg gcg aaa acc atg acc acg ccc aaa ggc gac acc      96
Pro Ala Val Arg Val Ala Lys Thr Met Thr Thr Pro Lys Gly Asp Thr
                   20                   25                   30

att acc gtg ttc gac ctg cgc ttt tgc gtt ccc aat aaa gaa atc ctg     144
Ile Thr Val Phe Asp Leu Arg Phe Cys Val Pro Asn Lys Glu Ile Leu
                   35                   40                   45

cct gaa aaa ggc ata cac acg ctg gag cat ttg ttc gca ggt ttt atg     192
Pro Glu Lys Gly Ile His Thr Leu Glu His Leu Phe Ala Gly Phe Met
                   50                   55                   60

cgc gac cac ttg aac ggc aac ggc gtg gaa atc atc gac att tcc ccg     240
Arg Asp His Leu Asn Gly Asn Gly Val Glu Ile Ile Asp Ile Ser Pro
   65                   70                   75                   80

atg ggc tgc cgc acc ggt ttt tat atg agc ctt atc ggc acg cct tcc     288
Met Gly Cys Arg Thr Gly Phe Tyr Met Ser Leu Ile Gly Thr Pro Ser
                   85                   90                   95

gaa cag cag gtc gcc gat gcg tgg ctg gct tcg atg cag gat gtt ttg     336
Glu Gln Gln Val Ala Asp Ala Trp Leu Ala Ser Met Gln Asp Val Leu
                   100                  105                  110

aat gtc aaa gac caa agc aaa atc ccc gag ttg aac gaa tac caa tgc     384
Asn Val Lys Asp Gln Ser Lys Ile Pro Glu Leu Asn Glu Tyr Gln Cys
                   115                  120                  125

ggc act tat caa atg cac tcg ctc gcc gaa gcg cag caa atc gcg caa     432
Gly Thr Tyr Gln Met His Ser Leu Ala Glu Ala Gln Gln Ile Ala Gln
                   130                  135                  140

aac gtg ttg gcg cgc aaa gtg gcg gtg aac aaa aat gaa gag ctg acg     480
Asn Val Leu Ala Arg Lys Val Ala Val Asn Lys Asn Glu Glu Leu Thr
                   145                  150                  155                  160

ctg gat gaa ggg ctg ctg aac gcc                                     504

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Leu Asp Glu Gly Leu Leu Asn Ala  
165

<210> 42

<211> 168

<212> PRT

<213> Neisseria meningitidis

<400> 42

Met Pro Leu Leu Asp Ser Phe Lys Val Asp His Thr Arg Met His Ala  
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Pro Ala Val Arg Val Ala Lys Thr Met Thr Thr Pro Lys Gly Asp Thr  
20 25 30

Ile Thr Val Phe Asp Leu Arg Phe Cys Val Pro Asn Lys Glu Ile Leu  
35 40 45

Pro Glu Lys Gly Ile His Thr Leu Glu His Leu Phe Ala Gly Phe Met  
50 55 60

Arg Asp His Leu Asn Gly Asn Gly Val Glu Ile Ile Asp Ile Ser Pro  
65 70 75 80

Met Gly Cys Arg Thr Gly Phe Tyr Met Ser Leu Ile Gly Thr Pro Ser  
85 90 95

Glu Gln Gln Val Ala Asp Ala Trp Leu Ala Ser Met Gln Asp Val Leu  
100 105 110

Asn Val Lys Asp Gln Ser Lys Ile Pro Glu Leu Asn Glu Tyr Gln Cys  
115 120 125

Gly Thr Tyr Gln Met His Ser Leu Ala Glu Ala Gln Gln Ile Ala Gln  
130 135 140

Asn Val Leu Ala Arg Lys Val Ala Val Asn Lys Asn Glu Glu Leu Thr  
145 150 155 160

Leu Asp Glu Gly Leu Leu Asn Ala  
165

<210> 43

<211> 813

<212> DNA



<213> *Neisseria meningitidis*

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(813)

&lt;400&gt; 43

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atg act atg cac gcc ctc ccc cgc tac gcc gtt ttt ggc aac ccc gtc   48
Met Thr Met His Ala Leu Pro Arg Tyr Ala Val Phe Gly Asn Pro Val
   1             5             10             15

gcc cac agc aaa tcg ccg caa att cat caa caa ttt gcc ctt cag gaa   96
Ala His Ser Lys Ser Pro Gln Ile His Gln Gln Phe Ala Leu Gln Glu
          20             25             30

ggc gtt gac att gaa tac gaa cgc att tgc gcc gac atc ggc ggt ttc  144
Gly Val Asp Ile Glu Tyr Glu Arg Ile Cys Ala Asp Ile Gly Gly Phe
          35             40             45

gcg cag gcg gtt tcg aca ttt ttt gaa aca ggc ggt tgc ggg gca aac  192
Ala Gln Ala Val Ser Thr Phe Phe Glu Thr Gly Gly Cys Gly Ala Asn
          50             55             60

gtt acc gta ccg ttc aag cag gaa gcg ttt cat ctg gcg gac gag cat  240
Val Thr Val Pro Phe Lys Gln Glu Ala Phe His Leu Ala Asp Glu His
          65             70             75             80

tct gaa cgc gca ttg gct gcc ggc gcg gtc aac acg ctg att ttt ctg  288
Ser Glu Arg Ala Leu Ala Ala Gly Ala Val Asn Thr Leu Ile Phe Leu
          85             90             95

aaa aac gga aaa ctg cgc ggc gac aat acc gac ggt atc ggt ttg gcc  336
Lys Asn Gly Lys Leu Arg Gly Asp Asn Thr Asp Gly Ile Gly Leu Ala
          100             105             110

aac gac atc acg cag gtc aaa aac att gcc atc gaa ggc aaa acc atc  384
Asn Asp Ile Thr Gln Val Lys Asn Ile Ala Ile Glu Gly Lys Thr Ile
          115             120             125

ttg ctt ttg ggc gcg ggc ggc gcg gtg cgc ggc gtg att cct gtt ttg  432
Leu Leu Leu Gly Ala Gly Gly Ala Val Arg Gly Val Ile Pro Val Leu
          130             135             140

aaa gaa cac cgt cct gcc cgt atc gtc att gcc aac cgt acc cgc gcc  480
Lys Glu His Arg Pro Ala Arg Ile Val Ile Ala Asn Arg Thr Arg Ala
          145             150             155             160

aaa gcc gag gaa ttg gcg cag ctt ttc ggc att gaa gcc gtc ccg atg  528

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Lys Ala Glu Glu Leu Ala Gln Leu Phe Gly Ile Glu Ala Val Pro Met  
 165 170 175  
 gcg gat gtg aac ggc ggt ttt gat atc atc atc aac ggc acg tcg ggc 576  
 Ala Asp Val Asn Gly Gly Phe Asp Ile Ile Ile Asn Gly Thr Ser Gly  
 180 185 190  
 ggt cta aac ggt cag att ccc gat att ccg ccc gat att ttt caa aac 624  
 Gly Leu Asn Gly Gln Ile Pro Asp Ile Pro Pro Asp Ile Phe Gln Asn  
 195 200 205  
 tgc gcg ctt gcc tac gat atg gtg tac ggc tgc gcg gca aaa ccg ttt 672  
 Cys Ala Leu Ala Tyr Asp Met Val Tyr Gly Cys Ala Ala Lys Pro Phe  
 210 215 220  
 tta gat ttt gca cga caa tcg ggt gcg aaa aaa act gcc gac gga ctg 720  
 Leu Asp Phe Ala Arg Gln Ser Gly Ala Lys Lys Thr Ala Asp Gly Leu  
 225 230 235 240  
 ggt atg cta gtc ggt caa gcg gcg gct tcc tac gcc ctc tgg cgc gga 768  
 Gly Met Leu Val Gly Gln Ala Ala Ala Ser Tyr Ala Leu Trp Arg Gly  
 245 250 255  
 ttt acg ccc gat atc cgc ccc gtt atc gaa tac atg aaa gcc cta 813  
 Phe Thr Pro Asp Ile Arg Pro Val Ile Glu Tyr Met Lys Ala Leu  
 260 265 270  
 <210> 44  
 <211> 271  
 <212> PRT  
 <213> Neisseria meningitidis  
 <400> 44  
 Met Thr Met His Ala Leu Pro Arg Tyr Ala Val Phe Gly Asn Pro Val  
 1 5 10 15  
 Ala His Ser Lys Ser Pro Gln Ile His Gln Gln Phe Ala Leu Gln Glu  
 20 25 30  
 Gly Val Asp Ile Glu Tyr Glu Arg Ile Cys Ala Asp Ile Gly Gly Phe  
 35 40 45  
 Ala Gln Ala Val Ser Thr Phe Phe Glu Thr Gly Gly Cys Gly Ala Asn  
 50 55 60  
 Val Thr Val Pro Phe Lys Gln Glu Ala Phe His Leu Ala Asp Glu His  
 65 70 75 80

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Ser Glu Arg Ala Leu Ala Ala Gly Ala Val Asn Thr Leu Ile Phe Leu
      85                      90                      95

Lys Asn Gly Lys Leu Arg Gly Asp Asn Thr Asp Gly Ile Gly Leu Ala
      100                    105                    110

Asn Asp Ile Thr Gln Val Lys Asn Ile Ala Ile Glu Gly Lys Thr Ile
      115                    120                    125

Leu Leu Leu Gly Ala Gly Gly Ala Val Arg Gly Val Ile Pro Val Leu
      130                    135                    140

Lys Glu His Arg Pro Ala Arg Ile Val Ile Ala Asn Arg Thr Arg Ala
      145                    150                    155                    160

Lys Ala Glu Glu Leu Ala Gln Leu Phe Gly Ile Glu Ala Val Pro Met
      165                    170                    175

Ala Asp Val Asn Gly Gly Phe Asp Ile Ile Ile Asn Gly Thr Ser Gly
      180                    185                    190

Gly Leu Asn Gly Gln Ile Pro Asp Ile Pro Pro Asp Ile Phe Gln Asn
      195                    200                    205

Cys Ala Leu Ala Tyr Asp Met Val Tyr Gly Cys Ala Ala Lys Pro Phe
      210                    215                    220

Leu Asp Phe Ala Arg Gln Ser Gly Ala Lys Lys Thr Ala Asp Gly Leu
      225                    230                    235                    240

Gly Met Leu Val Gly Gln Ala Ala Ala Ser Tyr Ala Leu Trp Arg Gly
      245                    250                    255

Phe Thr Pro Asp Ile Arg Pro Val Ile Glu Tyr Met Lys Ala Leu
      260                    265                    270

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&lt;210&gt; 45

&lt;211&gt; 546

&lt;212&gt; DNA

&lt;213&gt; Neisseria meningitidis

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(546)

&lt;400&gt; 45

ttg ctt tct cat ttg gat atg aaa ttc gtc agc gac ctt ttg tct gtc	48
Leu Leu Ser His Leu Asp Met Lys Phe Val Ser Asp Leu Leu Ser Val	
1 5 10 15	
atc ttg ttt ttt gct act tat acc gtt acc aaa aat atg att gcc gct	96
Ile Leu Phe Phe Ala Thr Tyr Thr Val Thr Lys Asn Met Ile Ala Ala	
20 25 30	
acg gcg gtt gcc ttg gtt gcc ggt gtg gtt cag gcg gct ttt ctg tat	144
Thr Ala Val Ala Leu Val Ala Gly Val Val Gln Ala Ala Phe Leu Tyr	
35 40 45	
tgg aaa tat aaa aag ctg gat acg atg cag tgg gtc gga ctg gtg ctg	192
Trp Lys Tyr Lys Lys Leu Asp Thr Met Gln Trp Val Gly Leu Val Leu	
50 55 60	
att gtc gta ttc ggc ggc gca acc att gtt ttg ggc gac agc cgc ttc	240
Ile Val Val Phe Gly Gly Ala Thr Ile Val Leu Gly Asp Ser Arg Phe	
65 70 75 80	
att atg tgg aag ccg agc gtt ttg ttt tgg ctg ggc gcg ctg ttc ctg	288
Ile Met Trp Lys Pro Ser Val Leu Phe Trp Leu Gly Ala Leu Phe Leu	
85 90 95	
tgg ggc agc cac ctg gcc ggt aaa aac ggc ttg aag gcg agt atc ggc	336
Trp Gly Ser His Leu Ala Gly Lys Asn Gly Leu Lys Ala Ser Ile Gly	
100 105 110	
agg gag att cag ctt ccg gat gcc gta tgg gcg aaa ttg acg tat atg	384
Arg Glu Ile Gln Leu Pro Asp Ala Val Trp Ala Lys Leu Thr Tyr Met	
115 120 125	
tgg gtc ggt ttc ctg att ttt atg ggt atc gcc aac tgg ttt gtg ttt	432
Trp Val Gly Phe Leu Ile Phe Met Gly Ile Ala Asn Trp Phe Val Phe	
130 135 140	
acc cgg ttc gag tcg caa tgg gtc aac tat aaa atg ttc ggc tcg act	480
Thr Arg Phe Glu Ser Gln Trp Val Asn Tyr Lys Met Phe Gly Ser Thr	
145 150 155 160	
gca ctg atg ctt gtt ttc ttt att att cag ggt att tat ctg agt acc	528
Ala Leu Met Leu Val Phe Phe Ile Ile Gln Gly Ile Tyr Leu Ser Thr	
165 170 175	
tgt ctg aaa aag gag gat	546
Cys Leu Lys Lys Glu Asp	
180	

&lt;210&gt; 46

&lt;211&gt; 182

&lt;212&gt; PRT

&lt;213&gt; Neisseria meningitidis

&lt;400&gt; 46

Leu Leu Ser His Leu Asp Met Lys Phe Val Ser Asp Leu Leu Ser Val  
 1 5 10 15

Ile Leu Phe Phe Ala Thr Tyr Thr Val Thr Lys Asn Met Ile Ala Ala  
 20 25 30

Thr Ala Val Ala Leu Val Ala Gly Val Val Gln Ala Ala Phe Leu Tyr  
 35 40 45

Trp Lys Tyr Lys Lys Leu Asp Thr Met Gln Trp Val Gly Leu Val Leu  
 50 55 60

Ile Val Val Phe Gly Gly Ala Thr Ile Val Leu Gly Asp Ser Arg Phe  
 65 70 75 80

Ile Met Trp Lys Pro Ser Val Leu Phe Trp Leu Gly Ala Leu Phe Leu  
 85 90 95

Trp Gly Ser His Leu Ala Gly Lys Asn Gly Leu Lys Ala Ser Ile Gly  
 100 105 110

Arg Glu Ile Gln Leu Pro Asp Ala Val Trp Ala Lys Leu Thr Tyr Met  
 115 120 125

Trp Val Gly Phe Leu Ile Phe Met Gly Ile Ala Asn Trp Phe Val Phe  
 130 135 140

Thr Arg Phe Glu Ser Gln Trp Val Asn Tyr Lys Met Phe Gly Ser Thr  
 145 150 155 160

Ala Leu Met Leu Val Phe Phe Ile Ile Gln Gly Ile Tyr Leu Ser Thr  
 165 170 175

Cys Leu Lys Lys Glu Asp  
 180

&lt;210&gt; 47

&lt;211&gt; 585

&lt;212&gt; DNA

<213> *Neisseria meningitidis*

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(585)

&lt;400&gt; 47

ttg	aat	att	aaa	ctg	aaa	acc	ttg	tta	ttg	ccc	ttc	gcc	acg	ctg	gca	48
Leu	Asn	Ile	Lys	Leu	Lys	Thr	Leu	Leu	Leu	Pro	Phe	Ala	Thr	Leu	Ala	
1				5					10					15		

ttg	tgc	acc	aat	gct	ttt	gcc	gcc	ccg	ccc	agc	gac	gcg	tcg	ttg	gcg	96
Leu	Cys	Thr	Asn	Ala	Phe	Ala	Ala	Pro	Pro	Ser	Asp	Ala	Ser	Leu	Ala	
			20					25					30			

cgt	tgg	ctg	gat	acg	cag	aat	ttt	gac	cgg	gat	ata	gaa	aaa	aat	atg	144
Arg	Trp	Leu	Asp	Thr	Gln	Asn	Phe	Asp	Arg	Asp	Ile	Glu	Lys	Asn	Met	
		35					40					45				

att	gag	ggc	ttt	aat	gcc	gga	ttt	aaa	ccg	tat	gcg	gac	aaa	gcc	ctt	192
Ile	Glu	Gly	Phe	Asn	Ala	Gly	Phe	Lys	Pro	Tyr	Ala	Asp	Lys	Ala	Leu	
	50					55					60					

gcc	gaa	atg	ccg	gaa	gcg	aaa	aaa	gat	cag	gcg	gca	gaa	gcc	ttt	aac	240
Ala	Glu	Met	Pro	Glu	Ala	Lys	Lys	Asp	Gln	Ala	Ala	Glu	Ala	Phe	Asn	
65					70					75				80		

cgt	tat	cgt	gag	aat	gtt	ttg	aaa	gat	ttg	att	acg	ccc	gaa	gtg	aaa	288
Arg	Tyr	Arg	Glu	Asn	Val	Leu	Lys	Asp	Leu	Ile	Thr	Pro	Glu	Val	Lys	
				85					90					95		

cag	gct	gtc	cgc	aat	act	tta	ttg	aag	aat	gcc	cgt	gag	ata	tac	acg	336
Gln	Ala	Val	Arg	Asn	Thr	Leu	Leu	Lys	Asn	Ala	Arg	Glu	Ile	Tyr	Thr	
		100						105					110			

caa	gaa	gaa	att	gac	ggc	atg	att	gcc	ttt	tac	ggc	tcg	cct	gtc	ggc	384
Gln	Glu	Glu	Ile	Asp	Gly	Met	Ile	Ala	Phe	Tyr	Gly	Ser	Pro	Val	Gly	
	115					120					125					

cag	tcc	gtc	gtt	gcc	aaa	aat	ccg	cgc	tta	atc	aag	aaa	tcg	atg	agt	432
Gln	Ser	Val	Val	Ala	Lys	Asn	Pro	Arg	Leu	Ile	Lys	Lys	Ser	Met	Ser	
	130				135					140						

gaa	ata	gcg	gta	tct	tgg	act	gca	ttg	tca	ggg	aaa	atc	gcg	caa	cat	480
Glu	Ile	Ala	Val	Ser	Trp	Thr	Ala	Leu	Ser	Gly	Lys	Ile	Ala	Gln	His	
145					150					155				160		

cat ctg ccc gag ttt acg gaa gag ttg cgg cgc atc atc tgc ggc ggt 528  
 His Leu Pro Glu Phe Thr Glu Glu Leu Arg Arg Ile Ile Cys Gly Gly  
                   165                  170                  175

aaa aat ccc gat gcg ggc tgt aaa caa gcc gga cag gtt ggg aaa agg 576  
 Lys Asn Pro Asp Ala Gly Cys Lys Gln Ala Gly Gln Val Gly Lys Arg  
                   180                  185                  190

cat cag aaa 585  
 His Gln Lys  
                   195

<210> 48

<211> 195

<212> PRT

<213> Neisseria meningitidis

<400> 48

Leu Asn Ile Lys Leu Lys Thr Leu Leu Leu Pro Phe Ala Thr Leu Ala  
       1                  5                  10                  15

Leu Cys Thr Asn Ala Phe Ala Ala Pro Pro Ser Asp Ala Ser Leu Ala  
                   20                  25                  30

Arg Trp Leu Asp Thr Gln Asn Phe Asp Arg Asp Ile Glu Lys Asn Met  
                   35                  40                  45

Ile Glu Gly Phe Asn Ala Gly Phe Lys Pro Tyr Ala Asp Lys Ala Leu  
                   50                  55                  60

Ala Glu Met Pro Glu Ala Lys Lys Asp Gln Ala Ala Glu Ala Phe Asn  
                   65                  70                  75                  80

Arg Tyr Arg Glu Asn Val Leu Lys Asp Leu Ile Thr Pro Glu Val Lys  
                   85                  90                  95

Gln Ala Val Arg Asn Thr Leu Leu Lys Asn Ala Arg Glu Ile Tyr Thr  
                   100                  105                  110

Gln Glu Glu Ile Asp Gly Met Ile Ala Phe Tyr Gly Ser Pro Val Gly  
                   115                  120                  125

Gln Ser Val Val Ala Lys Asn Pro Arg Leu Ile Lys Lys Ser Met Ser  
                   130                  135                  140

Glu Ile Ala Val Ser Trp Thr Ala Leu Ser Gly Lys Ile Ala Gln His  
                   145                  150                  155                  160

His Leu Pro Glu Phe Thr Glu Glu Leu Arg Arg Ile Ile Cys Gly Gly  
 165 170 175

Lys Asn Pro Asp Ala Gly Cys Lys Gln Ala Gly Gln Val Gly Lys Arg  
 180 185 190

His Gln Lys  
 195

<210> 49

<211> 462

<212> DNA

<213> Neisseria meningitidis

<220>

<221> CDS

<222> (1)..(462)

<400> 49

ttg ctt tgc ccg gaa aaa atg tcg ggg atg gcg gga cag tat ccg tac 48  
 Leu Leu Cys Pro Glu Lys Met Ser Gly Met Ala Gly Gln Tyr Pro Tyr  
 1 5 10 15

ggc gtc cgg tcg ggt ttg cgg agg aac ggc ttg aaa ctt tgg gat att 96  
 Gly Val Arg Ser Gly Leu Arg Arg Asn Gly Leu Lys Leu Trp Asp Ile  
 20 25 30

cat ttt aga atg acc cgt ttt atc gtc gca aga tgc ggt tta ttg ttt 144  
 His Phe Arg Met Thr Arg Phe Ile Val Ala Arg Cys Gly Leu Leu Phe  
 35 40 45

gca acc ctt aaa gga aaa acc atg aag aaa atg ttc gtg ctg ttc tgt 192  
 Ala Thr Leu Lys Gly Lys Thr Met Lys Lys Met Phe Val Leu Phe Cys  
 50 55 60

atg ctg ttc tcc tgc gcc ttc tcc ctt gcg gcg gta aac atc aat gcg 240  
 Met Leu Phe Ser Cys Ala Phe Ser Leu Ala Ala Val Asn Ile Asn Ala  
 65 70 75 80

gct tcg cag cag gag ctg gag gcg ctg ccg ggc ata ggc cct gcg aag 288  
 Ala Ser Gln Gln Glu Leu Glu Ala Leu Pro Gly Ile Gly Pro Ala Lys  
 85 90 95

gcg aag gcc att gcg gaa tac cgt gcg caa aac ggt gcg ttc aag tct 336  
 Ala Lys Ala Ile Ala Glu Tyr Arg Ala Gln Asn Gly Ala Phe Lys Ser



100	105	110	
gta gac gat ttg acc aag gta aag ggc atc ggc cct gcg gtg ctg gcg			384
Val Asp Asp Leu Thr Lys Val Lys Gly Ile Gly Pro Ala Val Leu Ala			
115	120	125	
aag ctg aag gat cag gct tct gtc ggt gcg ccc gca cca aaa ggc cca			432
Lys Leu Lys Asp Gln Ala Ser Val Gly Ala Pro Ala Pro Lys Gly Pro			
130	135	140	
gct aaa cca gtg ctg ccc gcg gat aaa aaa			462
Ala Lys Pro Val Leu Pro Ala Asp Lys Lys			
145	150		

&lt;210&gt; 50

&lt;211&gt; 154

&lt;212&gt; PRT

&lt;213&gt; Neisseria meningitidis

&lt;400&gt; 50

Leu Leu Cys Pro Glu Lys Met Ser Gly Met Ala Gly Gln Tyr Pro Tyr
1 5 10 15

Gly Val Arg Ser Gly Leu Arg Arg Asn Gly Leu Lys Leu Trp Asp Ile
20 25 30

His Phe Arg Met Thr Arg Phe Ile Val Ala Arg Cys Gly Leu Leu Phe
35 40 45

Ala Thr Leu Lys Gly Lys Thr Met Lys Lys Met Phe Val Leu Phe Cys
50 55 60

Met Leu Phe Ser Cys Ala Phe Ser Leu Ala Ala Val Asn Ile Asn Ala
65 70 75 80

Ala Ser Gln Gln Glu Leu Glu Ala Leu Pro Gly Ile Gly Pro Ala Lys
85 90 95

Ala Lys Ala Ile Ala Glu Tyr Arg Ala Gln Asn Gly Ala Phe Lys Ser
100 105 110

Val Asp Asp Leu Thr Lys Val Lys Gly Ile Gly Pro Ala Val Leu Ala
115 120 125

Lys Leu Lys Asp Gln Ala Ser Val Gly Ala Pro Ala Pro Lys Gly Pro
130 135 140

Ala Lys Pro Val Leu Pro Ala Asp Lys Lys  
145 150

<210> 51

<211> 969

<212> DNA

<213> Neisseria meningitidis

<220>

<221> CDS

<222> (1)..(969)

<400> 51

atg tcc gcc aag ttc caa caa gaa acc ctc aaa tcc cgt ttc gcg caa	48
Met Ser Ala Lys Phe Gln Gln Glu Thr Leu Lys Ser Arg Phe Ala Gln	
1 5 10 15	

gcc aaa gtc ctg gtt gtc ggc gac gtg atg ctc gac cgc tat tgg ttc	96
Ala Lys Val Leu Val Val Gly Asp Val Met Leu Asp Arg Tyr Trp Phe	
20 25 30	

ggc gat gtg tcc cgt att tcg ccc gaa gcc ccc gtg ccg gtg gcg aaa	144
Gly Asp Val Ser Arg Ile Ser Pro Glu Ala Pro Val Pro Val Ala Lys	
35 40 45	

atc gga cga atc gac caa cgc gcg ggc gga gcg gca aat gtc gcg cgc	192
Ile Gly Arg Ile Asp Gln Arg Ala Gly Gly Ala Ala Asn Val Ala Arg	
50 55 60	

aac atc gct tcg ctg ggc ggc aaa gta ggg ctg ttg tcg gta acc ggt	240
Asn Ile Ala Ser Leu Gly Gly Lys Val Gly Leu Leu Ser Val Thr Gly	
65 70 75 80	

aac gac gaa gcc gcc gac gcg ctc gac gcg ctg atg gtg cag gac ggc	288
Asn Asp Glu Ala Ala Asp Ala Leu Asp Ala Leu Met Val Gln Asp Gly	
85 90 95	

gtc gcc tcc tat ctg atg cgc gac aaa caa atc gcc acc acc gtc aaa	336
Val Ala Ser Tyr Leu Met Arg Asp Lys Gln Ile Ala Thr Thr Val Lys	
100 105 110	

ctg cgc gtc gtc gcc cgc aac cag cag ctt atc cgc ctt gat ttt gaa	384
Leu Arg Val Val Ala Arg Asn Gln Gln Leu Ile Arg Leu Asp Phe Glu	
115 120 125	

gaa cat ccc aac cgc gaa gtg ttg gaa caa atc aag cgg aaa tac cgc	432
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Glu	His	Pro	Asn	Arg	Glu	Val	Leu	Glu	Gln	Ile	Lys	Arg	Lys	Tyr	Arg		
130						135					140						
gaa	atc	ttg	ccc	gaa	tac	gac	gca	atc	att	ttt	tca	gac	tac	ggc	aaa	480	
Glu	Ile	Leu	Pro	Glu	Tyr	Asp	Ala	Ile	Ile	Phe	Ser	Asp	Tyr	Gly	Lys		
145					150					155					160		
ggc	ggc	ctg	tcg	cac	atc	tcc	gat	atg	atc	gat	tggt	gcg	aaa	cac	gaa	528	
Gly	Gly	Leu	Ser	His	Ile	Ser	Asp	Met	Ile	Asp	Trp	Ala	Lys	His	Glu		
				165						170					175		
ggc	aaa	acc	gta	tta	atc	gac	ccc	aaa	ggc	gac	gat	tac	gaa	aaa	tac	576	
Gly	Lys	Thr	Val	Leu	Ile	Asp	Pro	Lys	Gly	Asp	Asp	Tyr	Glu	Lys	Tyr		
			180						185					190			
gcc	ggc	gca	acc	ctg	att	acg	ccc	aac	cgc	gcc	gaa	ttg	aaa	gaa	gtg	624	
Ala	Gly	Ala	Thr	Leu	Ile	Thr	Pro	Asn	Arg	Ala	Glu	Leu	Lys	Glu	Val		
			195					200					205				
gtc	ggc	agc	tggt	aaa	aac	gaa	aat	gat	ttg	acc	gaa	aaa	gcc	caa	aac	672	
Val	Gly	Ser	Trp	Lys	Asn	Glu	Asn	Asp	Leu	Thr	Glu	Lys	Ala	Gln	Asn		
	210					215					220						
ctg	cgc	cgc	cac	ctc	gac	ttg	acc	gct	att	tta	ctg	acc	cga	agc	gaa	720	
Leu	Arg	Arg	His	Leu	Asp	Leu	Thr	Ala	Ile	Leu	Leu	Thr	Arg	Ser	Glu		
225					230					235					240		
gaa	ggc	atg	acc	ttg	ttc	agc	gaa	ggc	gaa	ccc	att	tac	cag	ccc	acc	768	
Glu	Gly	Met	Thr	Leu	Phe	Ser	Glu	Gly	Glu	Pro	Ile	Tyr	Gln	Pro	Thr		
				245					250					255			
cgc	gcc	caa	gaa	gtt	tac	gac	gta	tcc	ggt	gcg	ggc	gac	acc	gtc	att	816	
Arg	Ala	Gln	Glu	Val	Tyr	Asp	Val	Ser	Gly	Ala	Gly	Asp	Thr	Val	Ile		
			260					265					270				
gcc	gga	atg	ggc	ttg	ggt	ttg	gcg	gca	ggc	tgc	acc	atg	ccc	gaa	gcc	864	
Ala	Gly	Met	Gly	Leu	Gly	Leu	Ala	Ala	Gly	Cys	Thr	Met	Pro	Glu	Ala		
			275				280					285					
atg	tac	ctt	gcc	aat	act	gcg	gcc	ggg	gtt	gtc	gtg	gcg	aaa	ctc	ggt	912	
Met	Tyr	Leu	Ala	Asn	Thr	Ala	Ala	Gly	Val	Val	Val	Ala	Lys	Leu	Gly		
	290					295					300						
acg	gcg	gtt	tgc	tcg	ttt	gcc	gaa	ttg	acc	aag	gca	ttg	tca	ggg	caa	960	
Thr	Ala	Val	Cys	Ser	Phe	Ala	Glu	Leu	Thr	Lys	Ala	Leu	Ser	Gly	Gln		
305					310					315					320		
tca	aca	atg														969	

Ser Thr Met

&lt;210&gt; 52

&lt;211&gt; 323

&lt;212&gt; PRT

&lt;213&gt; Neisseria meningitidis

&lt;400&gt; 52

Met Ser Ala Lys Phe Gln Gln Glu Thr Leu Lys Ser Arg Phe Ala Gln  
 1 5 10 15

Ala Lys Val Leu Val Val Gly Asp Val Met Leu Asp Arg Tyr Trp Phe  
 20 25 30

Gly Asp Val Ser Arg Ile Ser Pro Glu Ala Pro Val Pro Val Ala Lys  
 35 40 45

Ile Gly Arg Ile Asp Gln Arg Ala Gly Gly Ala Ala Asn Val Ala Arg  
 50 55 60

Asn Ile Ala Ser Leu Gly Gly Lys Val Gly Leu Leu Ser Val Thr Gly  
 65 70 75 80

Asn Asp Glu Ala Ala Asp Ala Leu Asp Ala Leu Met Val Gln Asp Gly  
 85 90 95

Val Ala Ser Tyr Leu Met Arg Asp Lys Gln Ile Ala Thr Thr Val Lys  
 100 105 110

Leu Arg Val Val Ala Arg Asn Gln Gln Leu Ile Arg Leu Asp Phe Glu  
 115 120 125

Glu His Pro Asn Arg Glu Val Leu Glu Gln Ile Lys Arg Lys Tyr Arg  
 130 135 140

Glu Ile Leu Pro Glu Tyr Asp Ala Ile Ile Phe Ser Asp Tyr Gly Lys  
 145 150 155 160

Gly Gly Leu Ser His Ile Ser Asp Met Ile Asp Trp Ala Lys His Glu  
 165 170 175

Gly Lys Thr Val Leu Ile Asp Pro Lys Gly Asp Asp Tyr Glu Lys Tyr  
 180 185 190

Ala Gly Ala Thr Leu Ile Thr Pro Asn Arg Ala Glu Leu Lys Glu Val  
 195 200 205

Val Gly Ser Trp Lys Asn Glu Asn Asp Leu Thr Glu Lys Ala Gln Asn  
 210 215 220

Leu Arg Arg His Leu Asp Leu Thr Ala Ile Leu Leu Thr Arg Ser Glu  
 225 230 235 240

Glu Gly Met Thr Leu Phe Ser Glu Gly Glu Pro Ile Tyr Gln Pro Thr  
 245 250 255

Arg Ala Gln Glu Val Tyr Asp Val Ser Gly Ala Gly Asp Thr Val Ile  
 260 265 270

Ala Gly Met Gly Leu Gly Leu Ala Ala Gly Cys Thr Met Pro Glu Ala  
 275 280 285

Met Tyr Leu Ala Asn Thr Ala Ala Gly Val Val Val Ala Lys Leu Gly  
 290 295 300

Thr Ala Val Cys Ser Phe Ala Glu Leu Thr Lys Ala Leu Ser Gly Gln  
 305 310 315 320

Ser Thr Met

<210> 53

<211> 864

<212> DNA

<213> Neisseria meningitidis

<220>

<221> CDS

<222> (1)..(864)

<400> 53

atg aaa gca aaa atc ctg act tcc gtt gca ctg ctt gcc tgt tcc ggc 48  
 Met Lys Ala Lys Ile Leu Thr Ser Val Ala Leu Leu Ala Cys Ser Gly  
 1 5 10 15

agc ctg ttt gcc caa acg ctg gca acc gtc aac ggt cag aaa atc gac 96  
 Ser Leu Phe Ala Gln Thr Leu Ala Thr Val Asn Gly Gln Lys Ile Asp  
 20 25 30

agt tcc gtc att gat gcg cag gtt gcc gca ttc cgt gcg gaa aac agc 144  
 Ser Ser Val Ile Asp Ala Gln Val Ala Ala Phe Arg Ala Glu Asn Ser  
 35 40 45

cgt gcc gaa gac acg ccg caa ctg cgc caa tcc ctg ctg gaa aac gaa	192
Arg Ala Glu Asp Thr Pro Gln Leu Arg Gln Ser Leu Leu Glu Asn Glu	
50 55 60	
gtg gtc aac acc gtg gtc gca cag gaa gtg aaa cgc ctg aaa ctc gac	240
Val Val Asn Thr Val Val Ala Gln Glu Val Lys Arg Leu Lys Leu Asp	
65 70 75 80	
cgg tcg gca gag ttt aaa aat gcg ctt gcc aaa ttg cgt gcc gaa gcg	288
Arg Ser Ala Glu Phe Lys Asn Ala Leu Ala Lys Leu Arg Ala Glu Ala	
85 90 95	
aaa aag tcg ggc gac gac aag aaa ccg tcc ttc aaa acc gtt tgg cag	336
Lys Lys Ser Gly Asp Asp Lys Lys Pro Ser Phe Lys Thr Val Trp Gln	
100 105 110	
gcg gta aaa tat ggc ttg aac ggc gag gca tac gcg ctg cat atc gcc	384
Ala Val Lys Tyr Gly Leu Asn Gly Glu Ala Tyr Ala Leu His Ile Ala	
115 120 125	
aaa acc caa ccg gtt tcc gag cag gaa gta aaa gcc gca tat gac aat	432
Lys Thr Gln Pro Val Ser Glu Gln Glu Val Lys Ala Ala Tyr Asp Asn	
130 135 140	
atc agc ggt ttt tac aaa ggt acg cag gaa gtc cag ttg ggc gaa atc	480
Ile Ser Gly Phe Tyr Lys Gly Thr Gln Glu Val Gln Leu Gly Glu Ile	
145 150 155 160	
ctg acc gac aag gaa gaa aat gca aaa aaa gcg gtt gcc gac ttg aag	528
Leu Thr Asp Lys Glu Glu Asn Ala Lys Lys Ala Val Ala Asp Leu Lys	
165 170 175	
gcg aaa aaa ggt ttc gat gcc gtc ttg aaa caa tat tcc ctc aac gac	576
Ala Lys Lys Gly Phe Asp Ala Val Leu Lys Gln Tyr Ser Leu Asn Asp	
180 185 190	
cgt acc aaa cag acc ggt gcg ccg gtc gga tat gtg ccg ctg aaa gat	624
Arg Thr Lys Gln Thr Gly Ala Pro Val Gly Tyr Val Pro Leu Lys Asp	
195 200 205	
ttg gaa cag ggt gtt ccg ccg ctt tat cag gca att aag gac ttg aaa	672
Leu Glu Gln Gly Val Pro Pro Leu Tyr Gln Ala Ile Lys Asp Leu Lys	
210 215 220	
aaa ggc gaa ttt acg gca acg ccg ctg aaa aac ggc gat ttc tac ggc	720
Lys Gly Glu Phe Thr Ala Thr Pro Leu Lys Asn Gly Asp Phe Tyr Gly	
225 230 235 240	

gtt tat tat gtc aac gac agc cgc gag gta aaa gtg cct tct ttt gat 768  
 Val Tyr Tyr Val Asn Asp Ser Arg Glu Val Lys Val Pro Ser Phe Asp  
                   245                  250                  255

gaa atg aaa gga cag att gcg ggc aac ctt cag gcg gaa cgg att gac 816  
 Glu Met Lys Gly Gln Ile Ala Gly Asn Leu Gln Ala Glu Arg Ile Asp  
                   260                  265                  270

cgt gcc gtc ggt gca ctg ttg ggc aag gca aac atc aaa cct gca aaa 864  
 Arg Ala Val Gly Ala Leu Leu Gly Lys Ala Asn Ile Lys Pro Ala Lys  
                   275                  280                  285

<210> 54

<211> 288

<212> PRT

<213> Neisseria meningitidis

<400> 54

Met Lys Ala Lys Ile Leu Thr Ser Val Ala Leu Leu Ala Cys Ser Gly  
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Ser Leu Phe Ala Gln Thr Leu Ala Thr Val Asn Gly Gln Lys Ile Asp  
                   20                  25                  30

Ser Ser Val Ile Asp Ala Gln Val Ala Ala Phe Arg Ala Glu Asn Ser  
                   35                  40                  45

Arg Ala Glu Asp Thr Pro Gln Leu Arg Gln Ser Leu Leu Glu Asn Glu  
                   50                  55                  60

Val Val Asn Thr Val Val Ala Gln Glu Val Lys Arg Leu Lys Leu Asp  
   65                  70                  75                  80

Arg Ser Ala Glu Phe Lys Asn Ala Leu Ala Lys Leu Arg Ala Glu Ala  
                   85                  90                  95

Lys Lys Ser Gly Asp Asp Lys Lys Pro Ser Phe Lys Thr Val Trp Gln  
                   100                  105                  110

Ala Val Lys Tyr Gly Leu Asn Gly Glu Ala Tyr Ala Leu His Ile Ala  
                   115                  120                  125

Lys Thr Gln Pro Val Ser Glu Gln Glu Val Lys Ala Ala Tyr Asp Asn  
                   130                  135                  140

Ile Ser Gly Phe Tyr Lys Gly Thr Gln Glu Val Gln Leu Gly Glu Ile  
   145                  150                  155                  160

Leu Thr Asp Lys Glu Glu Asn Ala Lys Lys Ala Val Ala Asp Leu Lys  
 165 170 175

Ala Lys Lys Gly Phe Asp Ala Val Leu Lys Gln Tyr Ser Leu Asn Asp  
 180 185 190

Arg Thr Lys Gln Thr Gly Ala Pro Val Gly Tyr Val Pro Leu Lys Asp  
 195 200 205

Leu Glu Gln Gly Val Pro Pro Leu Tyr Gln Ala Ile Lys Asp Leu Lys  
 210 215 220

Lys Gly Glu Phe Thr Ala Thr Pro Leu Lys Asn Gly Asp Phe Tyr Gly  
 225 230 235 240

Val Tyr Tyr Val Asn Asp Ser Arg Glu Val Lys Val Pro Ser Phe Asp  
 245 250 255

Glu Met Lys Gly Gln Ile Ala Gly Asn Leu Gln Ala Glu Arg Ile Asp  
 260 265 270

Arg Ala Val Gly Ala Leu Leu Gly Lys Ala Asn Ile Lys Pro Ala Lys  
 275 280 285

<210> 55

<211> 1257

<212> DNA

<213> Neisseria meningitidis

<220>

<221> CDS

<222> (1) .. (1257)

<400> 55

atg aaa cag acc gtc ctc aaa aat aac ctg caa aac ctg ctt gaa agc 48  
 Met Lys Gln Thr Val Leu Lys Asn Asn Leu Gln Asn Leu Leu Glu Ser  
 1 5 10 15

gca gaa aat atc ctg ctg ctt caa ggc cct gtc ggc gat ttt ttt ctg 96  
 Ala Glu Asn Ile Leu Leu Leu Gln Gly Pro Val Gly Asp Phe Phe Leu  
 20 25 30

cgc ctt gcc gac tgg ctg act gca aac ggc aaa acc gta cat aaa ttc 144  
 Arg Leu Ala Asp Trp Leu Thr Ala Asn Gly Lys Thr Val His Lys Phe  
 35 40 45



aac ttt aat gca ggc gac gac tat ttt tat ccg ccc act caa gcg cat	192
Asn Phe Asn Ala Gly Asp Asp Tyr Phe Tyr Pro Pro Thr Gln Ala His	
50 55 60	
acc gtt gtt ttt aac gac aac tac gat gcc ttt cct gag ttt ttg caa	240
Thr Val Val Phe Asn Asp Asn Tyr Asp Ala Phe Pro Glu Phe Leu Gln	
65 70 75 80	
gaa tac atc act caa cat cac atc cag gcc gtt gtc tgc ttt ggc gac	288
Glu Tyr Ile Thr Gln His His Ile Gln Ala Val Val Cys Phe Gly Asp	
85 90 95	
aca cgc cct tat cac gtc att gca aaa cgc att gca aac gaa aac caa	336
Thr Arg Pro Tyr His Val Ile Ala Lys Arg Ile Ala Asn Glu Asn Gln	
100 105 110	
gcc agt ttc tgg gcg ttt gaa gaa ggc tat ttc cgc ccc tac tac atc	384
Ala Ser Phe Trp Ala Phe Glu Glu Gly Tyr Phe Arg Pro Tyr Tyr Ile	
115 120 125	
acc tta gaa aaa gac ggc gtc aac gca ttt tcc ccg ttg ccg cgc cgt	432
Thr Leu Glu Lys Asp Gly Val Asn Ala Phe Ser Pro Leu Pro Arg Arg	
130 135 140	
gcc gac ttt ttt ctt gaa caa ttc cct aag ctt gcc cag caa gaa tat	480
Ala Asp Phe Phe Leu Glu Gln Phe Pro Lys Leu Ala Gln Gln Glu Tyr	
145 150 155 160	
aaa gcg cca acg ccg gta cac ggc ggt ttt acg ccc atg gca aaa aac	528
Lys Ala Pro Thr Pro Val His Gly Gly Phe Thr Pro Met Ala Lys Asn	
165 170 175	
gct atc cgt tac tat atc gag ttg ttc cgc aat cta cgc aaa tac ccc	576
Ala Ile Arg Tyr Tyr Ile Glu Leu Phe Arg Asn Leu Arg Lys Tyr Pro	
180 185 190	
gac tac atc cac cac cgc gca ccc aat gcc ggc cat tac ctc aaa ccg	624
Asp Tyr Ile His His Arg Ala Pro Asn Ala Gly His Tyr Leu Lys Pro	
195 200 205	
tgg tcg ctc tcc atc ctc aag cgt ttg aac tac tat att gaa gac atc	672
Trp Ser Leu Ser Ile Leu Lys Arg Leu Asn Tyr Tyr Ile Glu Asp Ile	
210 215 220	
caa atc gcc aaa cgt gtg gaa gca ggc aaa tac ggc aag ttt ttt att	720
Gln Ile Ala Lys Arg Val Glu Ala Gly Lys Tyr Gly Lys Phe Phe Ile	
225 230 235 240	

gtt ccc ttg cag gta ttc aac gac agc caa gtc cgt atc cat tgc gac	768
Val Pro Leu Gln Val Phe Asn Asp Ser Gln Val Arg Ile His Cys Asp	
245 250 255	
ttt ccc agc gtc cgc agc ttc ctg ctc cat gtt ttg agt tca ttt gcc	816
Phe Pro Ser Val Arg Ser Phe Leu Leu His Val Leu Ser Ser Phe Ala	
260 265 270	
gaa cac gcg cct gcc gat acc aac atc atc atc aag cat cat cct atg	864
Glu His Ala Pro Ala Asp Thr Asn Ile Ile Ile Lys His His Pro Met	
275 280 285	
gac cgc ggc ttt atc gac tac tgg cgc gac att aaa cgc ttt atc aaa	912
Asp Arg Gly Phe Ile Asp Tyr Trp Arg Asp Ile Lys Arg Phe Ile Lys	
290 295 300	
gaa cac ccc gaa ctc aaa ggc cgt gtg att tat gtc cat gat gtc ccc	960
Glu His Pro Glu Leu Lys Gly Arg Val Ile Tyr Val His Asp Val Pro	
305 310 315 320	
ctg ccc gtt ttc ctg cgc cac ggt ctc ggc atg gtt acc atc aac agc	1008
Leu Pro Val Phe Leu Arg His Gly Leu Gly Met Val Thr Ile Asn Ser	
325 330 335	
acc agc ggc ctg tcc gga ctg att cac aat atg cca gtt aag gtt ctc	1056
Thr Ser Gly Leu Ser Gly Leu Ile His Asn Met Pro Val Lys Val Leu	
340 345 350	
ggc cgt gcc tat tat gat att ccc ggc att act gac caa aat acc ttg	1104
Gly Arg Ala Tyr Tyr Asp Ile Pro Gly Ile Thr Asp Gln Asn Thr Leu	
355 360 365	
gca gaa ttt tgg aat cat ccg aca ccg cct gac aaa gag ctg ttc cat	1152
Ala Glu Phe Trp Asn His Pro Thr Pro Pro Asp Lys Glu Leu Phe His	
370 375 380	
gcc tac cga atg tac cac ctc aac gtg acc caa att aac ggc aac ttc	1200
Ala Tyr Arg Met Tyr His Leu Asn Val Thr Gln Ile Asn Gly Asn Phe	
385 390 395 400	
tac agt cag gtc ttt ttt cct aac aaa aac aca tcc gac tct tcc aca	1248
Tyr Ser Gln Val Phe Phe Pro Asn Lys Asn Thr Ser Asp Ser Ser Thr	
405 410 415	
cca aca acc	1257
Pro Thr Thr	

&lt;210&gt; 56

&lt;211&gt; 419

&lt;212&gt; PRT

&lt;213&gt; Neisseria meningitidis

&lt;400&gt; 56

Met Lys Gln Thr Val Leu Lys Asn Asn Leu Gln Asn Leu Leu Glu Ser  
 1 5 10 15

Ala Glu Asn Ile Leu Leu Leu Gln Gly Pro Val Gly Asp Phe Phe Leu  
 20 25 30

Arg Leu Ala Asp Trp Leu Thr Ala Asn Gly Lys Thr Val His Lys Phe  
 35 40 45

Asn Phe Asn Ala Gly Asp Asp Tyr Phe Tyr Pro Pro Thr Gln Ala His  
 50 55 60

Thr Val Val Phe Asn Asp Asn Tyr Asp Ala Phe Pro Glu Phe Leu Gln  
 65 70 75 80

Glu Tyr Ile Thr Gln His His Ile Gln Ala Val Val Cys Phe Gly Asp  
 85 90 95

Thr Arg Pro Tyr His Val Ile Ala Lys Arg Ile Ala Asn Glu Asn Gln  
 100 105 110

Ala Ser Phe Trp Ala Phe Glu Glu Gly Tyr Phe Arg Pro Tyr Tyr Ile  
 115 120 125

Thr Leu Glu Lys Asp Gly Val Asn Ala Phe Ser Pro Leu Pro Arg Arg  
 130 135 140

Ala Asp Phe Phe Leu Glu Gln Phe Pro Lys Leu Ala Gln Gln Glu Tyr  
 145 150 155 160

Lys Ala Pro Thr Pro Val His Gly Gly Phe Thr Pro Met Ala Lys Asn  
 165 170 175

Ala Ile Arg Tyr Tyr Ile Glu Leu Phe Arg Asn Leu Arg Lys Tyr Pro  
 180 185 190

Asp Tyr Ile His His Arg Ala Pro Asn Ala Gly His Tyr Leu Lys Pro  
 195 200 205

Trp Ser Leu Ser Ile Leu Lys Arg Leu Asn Tyr Tyr Ile Glu Asp Ile  
 210 215 220

Gln Ile Ala Lys Arg Val Glu Ala Gly Lys Tyr Gly Lys Phe Phe Ile  
 225 230 235 240

Val Pro Leu Gln Val Phe Asn Asp Ser Gln Val Arg Ile His Cys Asp  
 245 250 255

Phe Pro Ser Val Arg Ser Phe Leu Leu His Val Leu Ser Ser Phe Ala  
 260 265 270

Glu His Ala Pro Ala Asp Thr Asn Ile Ile Ile Lys His His Pro Met  
 275 280 285

Asp Arg Gly Phe Ile Asp Tyr Trp Arg Asp Ile Lys Arg Phe Ile Lys  
 290 295 300

Glu His Pro Glu Leu Lys Gly Arg Val Ile Tyr Val His Asp Val Pro  
 305 310 315 320

Leu Pro Val Phe Leu Arg His Gly Leu Gly Met Val Thr Ile Asn Ser  
 325 330 335

Thr Ser Gly Leu Ser Gly Leu Ile His Asn Met Pro Val Lys Val Leu  
 340 345 350

Gly Arg Ala Tyr Tyr Asp Ile Pro Gly Ile Thr Asp Gln Asn Thr Leu  
 355 360 365

Ala Glu Phe Trp Asn His Pro Thr Pro Pro Asp Lys Glu Leu Phe His  
 370 375 380

Ala Tyr Arg Met Tyr His Leu Asn Val Thr Gln Ile Asn Gly Asn Phe  
 385 390 395 400

Tyr Ser Gln Val Phe Phe Pro Asn Lys Asn Thr Ser Asp Ser Ser Thr  
 405 410 415

Pro Thr Thr

<210> 57

<211> 1407

<212> DNA

<213> Neisseria meningitidis

<220>

&lt;221&gt; CDS

&lt;222&gt; (1)..(1407)

&lt;400&gt; 57

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atg acc tcc aca ttc ccc cgc cgc ctc gcc cgc aaa atc cgc caa acc 48
Met Thr Ser Thr Phe Pro Arg Arg Leu Ala Arg Lys Ile Arg Gln Thr
  1              5              10              15

cgc cgc ctg tcg cgc aaa agc atc gcc ttt ctg ttc ctt ttg gca ggt 96
Arg Arg Leu Ser Arg Lys Ser Ile Ala Phe Leu Phe Leu Leu Ala Gly
          20              25              30

tcg gca ctc gtc gcc ctg acc gcg ctg ttt ttt gcc cat ctt gcc gat 144
Ser Ala Leu Val Ala Leu Thr Ala Leu Phe Phe Ala His Leu Ala Asp
      35              40              45

ttt gcg ctg gaa ctg aac gcc aaa ctg gtt caa caa tac ccg tgg ttc 192
Phe Ala Leu Glu Leu Asn Ala Lys Leu Val Gln Gln Tyr Pro Trp Phe
      50              55              60

gcg tgg gtc gcg ctt cct ttg ggt tta ccg ctt att gcg tgg ctc aca 240
Ala Trp Val Ala Leu Pro Leu Gly Leu Pro Leu Ile Ala Trp Leu Thr
      65              70              75              80

cgc aaa ttc gcc ccc ttc acc gcc ggc agc ggc atc ccg cag gtc atc 288
Arg Lys Phe Ala Pro Phe Thr Ala Gly Ser Gly Ile Pro Gln Val Ile
          85              90              95

gcc tca ctg tcg ctg ccc tac ggc gca cag aaa acg cgg ctg atc cgc 336
Ala Ser Leu Ser Leu Pro Tyr Gly Ala Gln Lys Thr Arg Leu Ile Arg
          100              105              110

ctc ggg cag acg ctg ctg aag att ccg cta acc ttt ttg ggt atg ctg 384
Leu Gly Gln Thr Leu Leu Lys Ile Pro Leu Thr Phe Leu Gly Met Leu
      115              120              125

ttc ggc gcg tcc atc gga cgc gaa ggt ccg tcc gtg cag gtc ggc gcg 432
Phe Gly Ala Ser Ile Gly Arg Glu Gly Pro Ser Val Gln Val Gly Ala
      130              135              140

gca gtg atg ggc gcg tgg ggc gcg tgg tgc aag aaa cac ggc ttg gca 480
Ala Val Met Gly Ala Trp Gly Ala Trp Cys Lys Lys His Gly Leu Ala
      145              150              155              160

ttc aaa ggg atg cag gaa aac gat ttg atg gcg gcg ggc gcg gcg ggc 528
Phe Lys Gly Met Gln Glu Asn Asp Leu Met Ala Ala Gly Ala Ala Gly
          165              170              175

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ggt ttg gca gcc gcg ttc aac gcg ccg ctg gcg ggc gtg att ttc gcc	576
Gly Leu Ala Ala Ala Phe Asn Ala Pro Leu Ala Gly Val Ile Phe Ala	
180 185 190	
att gag gaa ctc ggg cgc ggc atc atg ttg cgc tgg gag agg caa att	624
Ile Glu Glu Leu Gly Arg Gly Ile Met Leu Arg Trp Glu Arg Gln Ile	
195 200 205	
ctt ttg ggc gtg ctc gcc tcc ggt ttc ata cag gtc gcc att cag ggc	672
Leu Leu Gly Val Leu Ala Ser Gly Phe Ile Gln Val Ala Ile Gln Gly	
210 215 220	
aac aac ccg tat ttt tcc ggc ttc aac ggc ggc gta ttg gaa cat atc	720
Asn Asn Pro Tyr Phe Ser Gly Phe Asn Gly Gly Val Leu Glu His Ile	
225 230 235 240	
ttt ctg tgg gtc gca ctg tcc ggc ctg gtt tgc ggc gcg gcg ggc ggg	768
Phe Leu Trp Val Ala Leu Ser Gly Leu Val Cys Gly Ala Ala Gly Gly	
245 250 255	
ctg ttc gga cgt ttg ctc tat cgc ggt gcg gcg gcg ttt gca ccg cgc	816
Leu Phe Gly Arg Leu Leu Tyr Arg Gly Ala Ala Ala Phe Ala Pro Arg	
260 265 270	
aag ata cgc ggc ttc atc cgc aac cgt ccg ctg ctg ctg gcg gca ctg	864
Lys Ile Arg Gly Phe Ile Arg Asn Arg Pro Leu Leu Leu Ala Ala Leu	
275 280 285	
atg ggg ctg ctg ctc gcc ctg ctc ggc acg ttc tac caa ggc aaa acc	912
Met Gly Leu Leu Leu Ala Leu Leu Gly Thr Phe Tyr Gln Gly Lys Thr	
290 295 300	
tac ggc acc ggc tac cac gaa gcc gcc caa gcc ctg cac ggc atc tac	960
Tyr Gly Thr Gly Tyr His Glu Ala Ala Gln Ala Leu His Gly Ile Tyr	
305 310 315 320	
gaa gcc ccc ttc gga ctc gcc gcc gcc aaa tgg ctc gcc acc gta ttc	1008
Glu Ala Pro Phe Gly Leu Ala Ala Ala Lys Trp Leu Ala Thr Val Phe	
325 330 335	
agc tat tgg gca ggc gtt ccg ggc ggc att ttc act ccc tcg ctg acc	1056
Ser Tyr Trp Ala Gly Val Pro Gly Gly Ile Phe Thr Pro Ser Leu Thr	
340 345 350	
ata ggc gcg gtt ttg ggc gag cat atc gcc gcc atc gcc gac ata tcg	1104
Ile Gly Ala Val Leu Gly Glu His Ile Ala Ala Ile Ala Asp Ile Ser	
355 360 365	

cag ggt gca aac atc atc gtc ctc atc tgc atg gcg gca ttt ctg gcg 1152  
 Gln Gly Ala Asn Ile Ile Val Leu Ile Cys Met Ala Ala Phe Leu Ala  
 370 375 380

ggc gcg aca caa tcc ccg att act tcc gcc gtc gtc gtc atg gaa atg 1200  
 Gly Ala Thr Gln Ser Pro Ile Thr Ser Ala Val Val Val Met Glu Met  
 385 390 395 400

acg ggc gga caa agc ctg ctg ttt tgg atg ctg att gcc tgc att ttc 1248  
 Thr Gly Gly Gln Ser Leu Leu Phe Trp Met Leu Ile Ala Cys Ile Phe  
 405 410 415

gcc tcg cag gtt tcg cgc cag ttt tcg ccg cgt ccg ttc tac cac gca 1296  
 Ala Ser Gln Val Ser Arg Gln Phe Ser Pro Arg Pro Phe Tyr His Ala  
 420 425 430

tcg gga atg cgc ttc cgc cag cgc gtg ctt caa gaa acc gcc gcc caa 1344  
 Ser Gly Met Arg Phe Arg Gln Arg Val Leu Gln Glu Thr Ala Ala Gln  
 435 440 445

acc ggc aat gcg ccc gca aga ccg caa aca gca aac agc aaa acg gga 1392  
 Thr Gly Asn Ala Pro Ala Arg Pro Gln Thr Ala Asn Ser Lys Thr Gly  
 450 455 460

atg ccg tct gaa aat 1407  
 Met Pro Ser Glu Asn  
 465

<210> 58

<211> 469

<212> PRT

<213> Neisseria meningitidis

<400> 58

Met Thr Ser Thr Phe Pro Arg Arg Leu Ala Arg Lys Ile Arg Gln Thr  
 1 5 10 15

Arg Arg Leu Ser Arg Lys Ser Ile Ala Phe Leu Phe Leu Leu Ala Gly  
 20 25 30

Ser Ala Leu Val Ala Leu Thr Ala Leu Phe Phe Ala His Leu Ala Asp  
 35 40 45

Phe Ala Leu Glu Leu Asn Ala Lys Leu Val Gln Gln Tyr Pro Trp Phe  
 50 55 60

Ala Trp Val Ala Leu Pro Leu Gly Leu Pro Leu Ile Ala Trp Leu Thr

65		70		75		80
Arg Lys Phe Ala Pro Phe Thr Ala Gly Ser Gly Ile Pro Gln Val Ile						
	85		90		95	
Ala Ser Leu Ser Leu Pro Tyr Gly Ala Gln Lys Thr Arg Leu Ile Arg						
	100		105		110	
Leu Gly Gln Thr Leu Leu Lys Ile Pro Leu Thr Phe Leu Gly Met Leu						
	115		120		125	
Phe Gly Ala Ser Ile Gly Arg Glu Gly Pro Ser Val Gln Val Gly Ala						
	130		135		140	
Ala Val Met Gly Ala Trp Gly Ala Trp Cys Lys Lys His Gly Leu Ala						
	145		150		155	160
Phe Lys Gly Met Gln Glu Asn Asp Leu Met Ala Ala Gly Ala Ala Gly						
	165		170		175	
Gly Leu Ala Ala Ala Phe Asn Ala Pro Leu Ala Gly Val Ile Phe Ala						
	180		185		190	
Ile Glu Glu Leu Gly Arg Gly Ile Met Leu Arg Trp Glu Arg Gln Ile						
	195		200		205	
Leu Leu Gly Val Leu Ala Ser Gly Phe Ile Gln Val Ala Ile Gln Gly						
	210		215		220	
Asn Asn Pro Tyr Phe Ser Gly Phe Asn Gly Gly Val Leu Glu His Ile						
	225		230		235	240
Phe Leu Trp Val Ala Leu Ser Gly Leu Val Cys Gly Ala Ala Gly Gly						
	245		250		255	
Leu Phe Gly Arg Leu Leu Tyr Arg Gly Ala Ala Ala Phe Ala Pro Arg						
	260		265		270	
Lys Ile Arg Gly Phe Ile Arg Asn Arg Pro Leu Leu Leu Ala Ala Leu						
	275		280		285	
Met Gly Leu Leu Leu Ala Leu Leu Gly Thr Phe Tyr Gln Gly Lys Thr						
	290		295		300	
Tyr Gly Thr Gly Tyr His Glu Ala Ala Gln Ala Leu His Gly Ile Tyr						
	305		310		315	320
Glu Ala Pro Phe Gly Leu Ala Ala Ala Lys Trp Leu Ala Thr Val Phe						



[illegible]

<210> 59

$\langle 211 \rangle$  423

<212> DNA

<213> *Neisseria meningitidis*

$\langle 220 \rangle$

<221> CDS

$\langle 222 \rangle$  (1) .. (423)

<400> 59

atg aca caa gaa acc gct ttg ggc gca gca ctg aaa tcc gcc gtc caa 48  
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1 5 10 15

act atg agc aaa aag aaa cag aca gaa atg att gcc gac cac atc tac 96  
Thr Met Ser Lys Lys Lys Gln Thr Glu Met Ile Ala Asp His Ile Tyr  
20 25 30

ggc aaa tat gat gta ttc aaa cga ttt aaa ccg ttg gca ctc ggt atc 144  
 Gly Lys Tyr Asp Val Phe Lys Arg Phe Lys Pro Leu Ala Leu Gly Ile  
                   35                                  40                                  45

gat cag gat ttg att gcc gct ttg ccc caa tac gat gcc gca ctg att 192  
 Asp Gln Asp Leu Ile Ala Ala Leu Pro Gln Tyr Asp Ala Ala Leu Ile  
                   50                                  55                                  60

gca cgc gtc ctc gcc aac cac tgc cgc cgt ccg cgc tat ctg aaa gcc 240  
 Ala Arg Val Leu Ala Asn His Cys Arg Arg Pro Arg Tyr Leu Lys Ala  
                   65                                  70                                  75                                  80

ttg gcg cgc ggt ggc aaa cgt ttc gat ttg aac aac cgt ttc aaa ggc 288  
 Leu Ala Arg Gly Gly Lys Arg Phe Asp Leu Asn Asn Arg Phe Lys Gly  
   85                                  90                                  95

gaa gtt acc ccc gaa gaa cag gca atc gcg caa aac cat cct ttc gtg 336  
 Glu Val Thr Pro Glu Glu Gln Ala Ile Ala Gln Asn His Pro Phe Val  
   100                                  105                                  110

cag cag gct ttg caa cag cag tcc gcc caa gct gtc gcc gaa acg ccg 384  
 Gln Gln Ala Leu Gln Gln Gln Ser Ala Gln Ala Val Ala Glu Thr Pro  
   115                                  120                                  125

tct gtt gaa gcc gaa gca gcc gaa tct tcc aca aca gaa 423  
 Ser Val Glu Ala Glu Ala Ala Glu Ser Ser Thr Thr Glu  
                   130                                  135                                  140

<210> 60

<211> 141

<212> PRT

<213> Neisseria meningitidis

<400> 60

Met Thr Gln Glu Thr Ala Leu Gly Ala Ala Leu Lys Ser Ala Val Gln  
           1                                  5                                  10                                  15

Thr Met Ser Lys Lys Lys Gln Thr Glu Met Ile Ala Asp His Ile Tyr  
                   20                                  25                                  30

Gly Lys Tyr Asp Val Phe Lys Arg Phe Lys Pro Leu Ala Leu Gly Ile  
                   35                                  40                                  45

Asp Gln Asp Leu Ile Ala Ala Leu Pro Gln Tyr Asp Ala Ala Leu Ile  
                   50                                  55                                  60

Ala Arg Val Leu Ala Asn His Cys Arg Arg Pro Arg Tyr Leu Lys Ala  
 65 70 75 80

Leu Ala Arg Gly Gly Lys Arg Phe Asp Leu Asn Asn Arg Phe Lys Gly  
 85 90 95

Glu Val Thr Pro Glu Glu Gln Ala Ile Ala Gln Asn His Pro Phe Val  
 100 105 110

Gln Gln Ala Leu Gln Gln Gln Ser Ala Gln Ala Val Ala Glu Thr Pro  
 115 120 125

Ser Val Glu Ala Glu Ala Ala Glu Ser Ser Thr Thr Glu  
 130 135 140

<210> 61

<211> 1377

<212> DNA

<213> Neisseria meningitidis

<220>

<221> CDS

<222> (1)..(1377)

<400> 61

atg ttc gct ttc aaa tcc tta ctc gat atg ccg cgc ggt gag gca ctt 48  
 Met Phe Ala Phe Lys Ser Leu Leu Asp Met Pro Arg Gly Glu Ala Leu  
 1 5 10 15

gcc gtc gtc gtc gct ctg att gcc gcg atg ggc tat acc atc att tca 96  
 Ala Val Val Val Ala Leu Ile Ala Ala Met Gly Tyr Thr Ile Ile Ser  
 20 25 30

ttg gag tgg ctg ccg cat atg tcc att att gcc gcc atc gtc gtg ctg 144  
 Leu Glu Trp Leu Pro His Met Ser Ile Ile Ala Ala Ile Val Val Leu  
 35 40 45

att ttg tac ggc ttg gcg cgc ggt ttg aaa tac aac gat atg cag cag 192  
 Ile Leu Tyr Gly Leu Ala Arg Gly Leu Lys Tyr Asn Asp Met Gln Gln  
 50 55 60

ggc atg ata ggc gcg ttg aat cag ggt atg ggc gcg att tac ctg ttt 240  
 Gly Met Ile Gly Ala Leu Asn Gln Gly Met Gly Ala Ile Tyr Leu Phe  
 65 70 75 80

ttc ttc atc ggg ctg atg gtc agc gcg ctg atg atg agc ggc gcg att 288

Phe	Phe	Ile	Gly	Leu	Met	Val	Ser	Ala	Leu	Met	Met	Ser	Gly	Ala	Ile	
				85					90					95		
ccg	acg	ctg	atg	tat	tac	ggt	ttc	gga	ctg	att	tcc	ccg	act	tat	ttt	336
Pro	Thr	Leu	Met	Tyr	Tyr	Gly	Phe	Gly	Leu	Ile	Ser	Pro	Thr	Tyr	Phe	
			100					105					110			
tat	ttt	tcc	gcc	ttc	gcg	ctg	tgt	tcc	gtc	atc	ggc	gtg	tcc	atc	ggc	384
Tyr	Phe	Ser	Ala	Phe	Ala	Leu	Cys	Ser	Val	Ile	Gly	Val	Ser	Ile	Gly	
			115				120					125				
agc	agc	ctg	acc	acc	tgc	gcc	act	gtc	ggc	gtt	gcc	ttt	atg	ggt	atg	432
Ser	Ser	Leu	Thr	Thr	Cys	Ala	Thr	Val	Gly	Val	Ala	Phe	Met	Gly	Met	
			130				135					140				
gcg	gcg	gcg	ttt	cag	gcc	gat	atg	gcg	atg	acg	gcg	ggc	gcg	att	gtt	480
Ala	Ala	Ala	Phe	Gln	Ala	Asp	Met	Ala	Met	Thr	Ala	Gly	Ala	Ile	Val	
145					150				155					160		
tcg	ggc	gca	ttt	ttt	ggc	gac	aaa	atg	tcc	ccg	ctt	tcc	gat	acg	acg	528
Ser	Gly	Ala	Phe	Phe	Gly	Asp	Lys	Met	Ser	Pro	Leu	Ser	Asp	Thr	Thr	
				165				170					175			
ggc	att	tcc	gcg	tcc	att	gtc	ggt	atc	gac	ctg	ttt	gaa	cac	atc	aaa	576
Gly	Ile	Ser	Ala	Ser	Ile	Val	Gly	Ile	Asp	Leu	Phe	Glu	His	Ile	Lys	
			180					185				190				
aat	atg	atg	tac	acc	acc	att	ccc	gcg	tgg	ctc	atc	agt	gcg	gca	ctg	624
Asn	Met	Met	Tyr	Thr	Thr	Ile	Pro	Ala	Trp	Leu	Ile	Ser	Ala	Ala	Leu	
			195				200					205				
atg	ctg	tgg	ctt	ctt	ccc	agc	gtc	gcc	gcg	cag	gat	ttg	aac	agc	gtc	672
Met	Leu	Trp	Leu	Leu	Pro	Ser	Val	Ala	Ala	Gln	Asp	Leu	Asn	Ser	Val	
			210				215				220					
gaa	tcc	ttc	cgc	agc	cag	ctt	gaa	gcc	acg	gga	ttg	gtg	cac	tgc	tat	720
Glu	Ser	Phe	Arg	Ser	Gln	Leu	Glu	Ala	Thr	Gly	Leu	Val	His	Cys	Tyr	
225					230				235					240		
tcg	ctg	att	ccg	ttt	gcg	ctg	ttg	gtc	gtt	ttg	gca	ttg	atg	cgc	gtc	768
Ser	Leu	Ile	Pro	Phe	Ala	Leu	Leu	Val	Val	Leu	Ala	Leu	Met	Arg	Val	
				245				250					255			
aat	gcc	gtg	gtc	gct	atg	ctc	ttt	acc	gtc	att	gcc	gcc	gtt	gcc	gta	816
Asn	Ala	Val	Val	Ala	Met	Leu	Phe	Thr	Val	Ile	Ala	Ala	Val	Ala	Val	
				260				265					270			
acg	tat	ctg	cac	agc	acg	ccc	gat	ctg	cgt	cag	ctc	ggc	gcg	tgg	ttt	864

Thr	Tyr	Leu	His	Ser	Thr	Pro	Asp	Leu	Arg	Gln	Leu	Gly	Ala	Trp	Phe	
		275					280					285				
tac	ggc	ggc	tac	aaa	ctc	gaa	ggc	gaa	gcg	ttt	aaa	gac	att	gcc	aaa	912
Tyr	Gly	Gly	Tyr	Lys	Leu	Glu	Gly	Glu	Ala	Phe	Lys	Asp	Ile	Ala	Lys	
		290					295				300					
ctc	att	tct	cgc	ggc	ggt	ttg	gaa	agt	atg	ttt	ttc	acg	cag	acc	atc	960
Leu	Ile	Ser	Arg	Gly	Gly	Leu	Glu	Ser	Met	Phe	Phe	Thr	Gln	Thr	Ile	
305					310					315					320	
gtg	att	ctt	ggg	atg	agc	ctt	ggc	ggg	ctg	ctg	ttt	gca	ctg	ggc	gcg	1008
Val	Ile	Leu	Gly	Met	Ser	Leu	Gly	Gly	Leu	Leu	Phe	Ala	Leu	Gly	Ala	
				325					330					335		
att	cct	tcc	ctg	ctg	gat	gcc	gtc	cgc	agc	ttt	ttg	acg	aat	gcc	ggg	1056
Ile	Pro	Ser	Leu	Leu	Asp	Ala	Val	Arg	Ser	Phe	Leu	Thr	Asn	Ala	Gly	
			340					345					350			
cgt	gcc	aca	ttc	agc	gtt	gcc	atg	act	tcg	gtc	ggg	gtt	aat	ttc	ctg	1104
Arg	Ala	Thr	Phe	Ser	Val	Ala	Met	Thr	Ser	Val	Gly	Val	Asn	Phe	Leu	
		355					360					365				
atc	ggc	gag	caa	tat	ttg	agt	att	ttg	ttg	tcg	ggt	gaa	acg	ttc	aaa	1152
Ile	Gly	Glu	Gln	Tyr	Leu	Ser	Ile	Leu	Leu	Ser	Gly	Glu	Thr	Phe	Lys	
		370					375				380					
cct	gtt	tac	gat	aag	ctc	ggt	ctg	cat	tcg	cgc	aat	ctg	tcg	cgg	acg	1200
Pro	Val	Tyr	Asp	Lys	Leu	Gly	Leu	His	Ser	Arg	Asn	Leu	Ser	Arg	Thr	
385					390					395					400	
ctg	gaa	gat	gcg	ggg	acg	gtc	atc	aac	ccg	ctc	gta	ccg	tgg	agc	gta	1248
Leu	Glu	Asp	Ala	Gly	Thr	Val	Ile	Asn	Pro	Leu	Val	Pro	Trp	Ser	Val	
				405					410					415		
tgc	ggc	gtg	ttc	atc	agc	cac	gcg	ctg	ggc	gtg	ccg	gtt	tgg	gaa	tat	1296
Cys	Gly	Val	Phe	Ile	Ser	His	Ala	Leu	Gly	Val	Pro	Val	Trp	Glu	Tyr	
			420					425					430			
ctg	ccg	tat	gcc	ttt	ttc	tgc	tat	ttg	agt	ttg	gct	ttg	acc	ctg	tta	1344
Leu	Pro	Tyr	Ala	Phe	Phe	Cys	Tyr	Leu	Ser	Leu	Ala	Leu	Thr	Leu	Leu	
		435					440					445				
ttc	ggt	tgg	acg	ggg	ctg	act	ttg	agc	aaa	aaa						1377
Phe	Gly	Trp	Thr	Gly	Leu	Thr	Leu	Ser	Lys	Lys						
		450					455									

&lt;210&gt; 62

&lt;211&gt; 459

&lt;212&gt; PRT

&lt;213&gt; Neisseria meningitidis

&lt;400&gt; 62

Met Phe Ala Phe Lys Ser Leu Leu Asp Met Pro Arg Gly Glu Ala Leu  
 1 5 10 15

Ala Val Val Val Ala Leu Ile Ala Ala Met Gly Tyr Thr Ile Ile Ser  
 20 25 30

Leu Glu Trp Leu Pro His Met Ser Ile Ile Ala Ala Ile Val Val Leu  
 35 40 45

Ile Leu Tyr Gly Leu Ala Arg Gly Leu Lys Tyr Asn Asp Met Gln Gln  
 50 55 60

Gly Met Ile Gly Ala Leu Asn Gln Gly Met Gly Ala Ile Tyr Leu Phe  
 65 70 75 80

Phe Phe Ile Gly Leu Met Val Ser Ala Leu Met Met Ser Gly Ala Ile  
 85 90 95

Pro Thr Leu Met Tyr Tyr Gly Phe Gly Leu Ile Ser Pro Thr Tyr Phe  
 100 105 110

Tyr Phe Ser Ala Phe Ala Leu Cys Ser Val Ile Gly Val Ser Ile Gly  
 115 120 125

Ser Ser Leu Thr Thr Cys Ala Thr Val Gly Val Ala Phe Met Gly Met  
 130 135 140

Ala Ala Ala Phe Gln Ala Asp Met Ala Met Thr Ala Gly Ala Ile Val  
 145 150 155 160

Ser Gly Ala Phe Phe Gly Asp Lys Met Ser Pro Leu Ser Asp Thr Thr  
 165 170 175

Gly Ile Ser Ala Ser Ile Val Gly Ile Asp Leu Phe Glu His Ile Lys  
 180 185 190

Asn Met Met Tyr Thr Thr Ile Pro Ala Trp Leu Ile Ser Ala Ala Leu  
 195 200 205

Met Leu Trp Leu Leu Pro Ser Val Ala Ala Gln Asp Leu Asn Ser Val  
 210 215 220

Glu Ser Phe Arg Ser Gln Leu Glu Ala Thr Gly Leu Val His Cys Tyr  
 225 230 235 240  
 Ser Leu Ile Pro Phe Ala Leu Leu Val Val Leu Ala Leu Met Arg Val  
 245 250 255  
 Asn Ala Val Val Ala Met Leu Phe Thr Val Ile Ala Ala Val Ala Val  
 260 265 270  
 Thr Tyr Leu His Ser Thr Pro Asp Leu Arg Gln Leu Gly Ala Trp Phe  
 275 280 285  
 Tyr Gly Gly Tyr Lys Leu Glu Gly Glu Ala Phe Lys Asp Ile Ala Lys  
 290 295 300  
 Leu Ile Ser Arg Gly Gly Leu Glu Ser Met Phe Phe Thr Gln Thr Ile  
 305 310 315 320  
 Val Ile Leu Gly Met Ser Leu Gly Gly Leu Leu Phe Ala Leu Gly Ala  
 325 330 335  
 Ile Pro Ser Leu Leu Asp Ala Val Arg Ser Phe Leu Thr Asn Ala Gly  
 340 345 350  
 Arg Ala Thr Phe Ser Val Ala Met Thr Ser Val Gly Val Asn Phe Leu  
 355 360 365  
 Ile Gly Glu Gln Tyr Leu Ser Ile Leu Leu Ser Gly Glu Thr Phe Lys  
 370 375 380  
 Pro Val Tyr Asp Lys Leu Gly Leu His Ser Arg Asn Leu Ser Arg Thr  
 385 390 395 400  
 Leu Glu Asp Ala Gly Thr Val Ile Asn Pro Leu Val Pro Trp Ser Val  
 405 410 415  
 Cys Gly Val Phe Ile Ser His Ala Leu Gly Val Pro Val Trp Glu Tyr  
 420 425 430  
 Leu Pro Tyr Ala Phe Phe Cys Tyr Leu Ser Leu Ala Leu Thr Leu Leu  
 435 440 445  
 Phe Gly Trp Thr Gly Leu Thr Leu Ser Lys Lys  
 450 455

&lt;210&gt; 63

&lt;211&gt; 1098

&lt;212&gt; DNA

<213> *Neisseria meningitidis*

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(1098)

&lt;400&gt; 63

atg gca ggc aac act ttc gga caa ctc ttc acc gtt acc acc ttc ggc	48
Met Ala Gly Asn Thr Phe Gly Gln Leu Phe Thr Val Thr Thr Phe Gly	
1 5 10 15	
 gaa agc cac ggc gcg ggt ttg ggc tgt atc atc gac ggc tgc ccg ccc	96
Glu Ser His Gly Ala Gly Leu Gly Cys Ile Ile Asp Gly Cys Pro Pro	
20 25 30	
 ggc ttg gaa tta agc gaa gcg gat atc caa ttt gac ctc gac cga cgc	144
Gly Leu Glu Leu Ser Glu Ala Asp Ile Gln Phe Asp Leu Asp Arg Arg	
35 40 45	
 aaa ccc ggc acc agc cgc cac gtt acc caa cgc cgc gaa gcc gac caa	192
Lys Pro Gly Thr Ser Arg His Val Thr Gln Arg Arg Glu Ala Asp Gln	
50 55 60	
 gtc gaa atc ctc tcc ggc gta ttc gaa ggc aaa acc acc ggc acg ccc	240
Val Glu Ile Leu Ser Gly Val Phe Glu Gly Lys Thr Thr Gly Thr Pro	
65 70 75 80	
 atc gcc ctc tta atc cgc aat acc gac cag cgc agc aaa gac tac ggc	288
Ile Ala Leu Leu Ile Arg Asn Thr Asp Gln Arg Ser Lys Asp Tyr Gly	
85 90 95	
 aac atc gcc acc agc ttc cgc ccc ggc cac gcc gac tat acc tat tgg	336
Asn Ile Ala Thr Ser Phe Arg Pro Gly His Ala Asp Tyr Thr Tyr Trp	
100 105 110	
 cac aaa tac ggc acg cgc gac tac cgg ggc ggc ggc agg agt tcc gcc	384
His Lys Tyr Gly Thr Arg Asp Tyr Arg Gly Gly Gly Arg Ser Ser Ala	
115 120 125	
 cgc gaa acc gcc gcc cgc gtt gcc gcc gga gcc gtt gcc aaa aaa tgg	432
Arg Glu Thr Ala Ala Arg Val Ala Ala Gly Ala Val Ala Lys Lys Trp	
130 135 140	
 ttg aaa gaa aaa ttc ggc acg gaa atc acc gcc tac gtt acc caa gtc	480
Leu Lys Glu Lys Phe Gly Thr Glu Ile Thr Ala Tyr Val Thr Gln Val	
145 150 155 160	



ggc gaa aaa gaa atc cgg ttt gaa ggc tgc gaa cac att tcc caa aat	528
Gly Glu Lys Glu Ile Arg Phe Glu Gly Cys Glu His Ile Ser Gln Asn	
165 170 175	
cct ttt ttt gcc gcc aac cat agc caa att gcc gag ctg gaa aac tat	576
Pro Phe Phe Ala Ala Asn His Ser Gln Ile Ala Glu Leu Glu Asn Tyr	
180 185 190	
atg gac agc gtg cgc aaa tcc ttg gat tcc gtc ggc gcg aag ctg cat	624
Met Asp Ser Val Arg Lys Ser Leu Asp Ser Val Gly Ala Lys Leu His	
195 200 205	
att gaa gcc gcc aac gtc ccc gtc ggc ttg ggc gaa ccc gta ttc gac	672
Ile Glu Ala Ala Asn Val Pro Val Gly Leu Gly Glu Pro Val Phe Asp	
210 215 220	
cgc ctc gat gcc gaa atc gcc tac gcc atg atg ggc atc aac gcc gtc	720
Arg Leu Asp Ala Glu Ile Ala Tyr Ala Met Met Gly Ile Asn Ala Val	
225 230 235 240	
aaa ggc gtg gaa atc ggc gca ggt ttt gac agc gta acg caa cgc ggc	768
Lys Gly Val Glu Ile Gly Ala Gly Phe Asp Ser Val Thr Gln Arg Gly	
245 250 255	
agc gaa cac ggc gac gaa ctc acc ccg caa ggc ttc ctg tcc aac cac	816
Ser Glu His Gly Asp Glu Leu Thr Pro Gln Gly Phe Leu Ser Asn His	
260 265 270	
tca ggc ggc atc ctc ggc ggc atc agc acc gga caa gac atc cac gtc	864
Ser Gly Gly Ile Leu Gly Gly Ile Ser Thr Gly Gln Asp Ile His Val	
275 280 285	
aat atc gcc atc aaa ccc acc agc tcc atc gcc acc ccg cgc cgc agt	912
Asn Ile Ala Ile Lys Pro Thr Ser Ser Ile Ala Thr Pro Arg Arg Ser	
290 295 300	
atc gac atc aac ggc aac ccc atc gaa ctc gcc acg cac ggc agg cac	960
Ile Asp Ile Asn Gly Asn Pro Ile Glu Leu Ala Thr His Gly Arg His	
305 310 315 320	
gac ccc tgc gtc ggc ttg cgc gcc gcg ccg att gca gaa gct atg ctg	1008
Asp Pro Cys Val Gly Leu Arg Ala Ala Pro Ile Ala Glu Ala Met Leu	
325 330 335	
gca ttg gtt tta atc gac cac gcc ctg cgc cat cgc gcg caa aat gcg	1056
Ala Leu Val Leu Ile Asp His Ala Leu Arg His Arg Ala Gln Asn Ala	
340 345 350	

gat gtt cag gtt aat acg ccc gac att acc ctt tca aac aaa 1098  
 Asp Val Gln Val Asn Thr Pro Asp Ile Thr Leu Ser Asn Lys  
 355 360 365

<210> 64

<211> 366

<212> PRT

<213> Neisseria meningitidis

<400> 64

Met Ala Gly Asn Thr Phe Gly Gln Leu Phe Thr Val Thr Thr Phe Gly  
 1 5 10 15

Glu Ser His Gly Ala Gly Leu Gly Cys Ile Ile Asp Gly Cys Pro Pro  
 20 25 30

Gly Leu Glu Leu Ser Glu Ala Asp Ile Gln Phe Asp Leu Asp Arg Arg  
 35 40 45

Lys Pro Gly Thr Ser Arg His Val Thr Gln Arg Arg Glu Ala Asp Gln  
 50 55 60

Val Glu Ile Leu Ser Gly Val Phe Glu Gly Lys Thr Thr Gly Thr Pro  
 65 70 75 80

Ile Ala Leu Leu Ile Arg Asn Thr Asp Gln Arg Ser Lys Asp Tyr Gly  
 85 90 95

Asn Ile Ala Thr Ser Phe Arg Pro Gly His Ala Asp Tyr Thr Tyr Trp  
 100 105 110

His Lys Tyr Gly Thr Arg Asp Tyr Arg Gly Gly Gly Arg Ser Ser Ala  
 115 120 125

Arg Glu Thr Ala Ala Arg Val Ala Ala Gly Ala Val Ala Lys Lys Trp  
 130 135 140

Leu Lys Glu Lys Phe Gly Thr Glu Ile Thr Ala Tyr Val Thr Gln Val  
 145 150 155 160

Gly Glu Lys Glu Ile Arg Phe Glu Gly Cys Glu His Ile Ser Gln Asn  
 165 170 175

Pro Phe Phe Ala Ala Asn His Ser Gln Ile Ala Glu Leu Glu Asn Tyr  
 180 185 190

Met Asp Ser Val Arg Lys Ser Leu Asp Ser Val Gly Ala Lys Leu His  
 195 200 205

Ile Glu Ala Ala Asn Val Pro Val Gly Leu Gly Glu Pro Val Phe Asp  
 210 215 220

Arg Leu Asp Ala Glu Ile Ala Tyr Ala Met Met Gly Ile Asn Ala Val  
 225 230 235 240

Lys Gly Val Glu Ile Gly Ala Gly Phe Asp Ser Val Thr Gln Arg Gly  
 245 250 255

Ser Glu His Gly Asp Glu Leu Thr Pro Gln Gly Phe Leu Ser Asn His  
 260 265 270

Ser Gly Gly Ile Leu Gly Gly Ile Ser Thr Gly Gln Asp Ile His Val  
 275 280 285

Asn Ile Ala Ile Lys Pro Thr Ser Ser Ile Ala Thr Pro Arg Arg Ser  
 290 295 300

Ile Asp Ile Asn Gly Asn Pro Ile Glu Leu Ala Thr His Gly Arg His  
 305 310 315 320

Asp Pro Cys Val Gly Leu Arg Ala Ala Pro Ile Ala Glu Ala Met Leu  
 325 330 335

Ala Leu Val Leu Ile Asp His Ala Leu Arg His Arg Ala Gln Asn Ala  
 340 345 350

Asp Val Gln Val Asn Thr Pro Asp Ile Thr Leu Ser Asn Lys  
 355 360 365

<210> 65

<211> 461

<212> DNA

<213> Neisseria meningitidis

<220>

<221> CDS

<222> (1)..(459)

<400> 65

atg caa agc ggt ttt aac gct att ttc agg aat gac acc atg cag gtt 48  
 Met Gln Ser Gly Phe Asn Ala Ile Phe Arg Asn Asp Thr Met Gln Val  
 1 5 10 15

aca tca aaa tgg ata gac gga atg tgc ttt gtc gga aca acg gaa ggc 96  
 Thr Ser Lys Trp Ile Asp Gly Met Cys Phe Val Gly Thr Thr Glu Gly  
 20 25 30

ggg cac agc gtc gtt atg gag ggg tcg gcg gca gaa ggt gcg gcc aag 144  
 Gly His Ser Val Val Met Glu Gly Ser Ala Ala Glu Gly Ala Ala Lys  
 35 40 45

cgc ggg ccc agc cct ttg gaa atg ctg ctg ttg ggc gtg gcg ggc tgt 192  
 Arg Gly Pro Ser Pro Leu Glu Met Leu Leu Leu Gly Val Ala Gly Cys  
 50 55 60

tcg agc atc gat gtg gtg atg att gcc gaa aaa cag cgt cag aaa gtg 240  
 Ser Ser Ile Asp Val Val Met Ile Ala Glu Lys Gln Arg Gln Lys Val  
 65 70 75 80

act gac tgc cgt gcg acg gtt acg gcg aaa cgg gcg gac gat gcg ccg 288  
 Thr Asp Cys Arg Ala Thr Val Thr Ala Lys Arg Ala Asp Asp Ala Pro  
 85 90 95

cgc gtg ttt acc gaa atc cac atc cat ttc aaa gta ttc ggg cat gat 336  
 Arg Val Phe Thr Glu Ile His Ile His Phe Lys Val Phe Gly His Asp  
 100 105 110

ttg aaa gaa tcg gcc att gag cgc gcc gtt cag atg tct gcc gaa aaa 384  
 Leu Lys Glu Ser Ala Ile Glu Arg Ala Val Gln Met Ser Ala Glu Lys  
 115 120 125

tac tgt tcg gct tcg att atg ttg ggc aaa gcg gca aag att acc cac 432  
 Tyr Cys Ser Ala Ser Ile Met Leu Gly Lys Ala Ala Lys Ile Thr His  
 130 135 140

agt ttt gaa att gcc ggg gca gat aaa ta 461  
 Ser Phe Glu Ile Ala Gly Ala Asp Lys  
 145 150

&lt;210&gt; 66

&lt;211&gt; 153

&lt;212&gt; PRT

&lt;213&gt; Neisseria meningitidis

&lt;400&gt; 66

Met Gln Ser Gly Phe Asn Ala Ile Phe Arg Asn Asp Thr Met Gln Val  
 1 5 10 15

Thr Ser Lys Trp Ile Asp Gly Met Cys Phe Val Gly Thr Thr Glu Gly

20 25 30  
 Gly His Ser Val Val Met Glu Gly Ser Ala Ala Glu Gly Ala Ala Lys  
 35 40 45  
 Arg Gly Pro Ser Pro Leu Glu Met Leu Leu Leu Gly Val Ala Gly Cys  
 50 55 60  
 Ser Ser Ile Asp Val Val Met Ile Ala Glu Lys Gln Arg Gln Lys Val  
 65 70 75 80  
 Thr Asp Cys Arg Ala Thr Val Thr Ala Lys Arg Ala Asp Asp Ala Pro  
 85 90 95  
 Arg Val Phe Thr Glu Ile His Ile His Phe Lys Val Phe Gly His Asp  
 100 105 110  
 Leu Lys Glu Ser Ala Ile Glu Arg Ala Val Gln Met Ser Ala Glu Lys  
 115 120 125  
 Tyr Cys Ser Ala Ser Ile Met Leu Gly Lys Ala Ala Lys Ile Thr His  
 130 135 140  
 Ser Phe Glu Ile Ala Gly Ala Asp Lys  
 145 150

<210> 67  
 <211> 1659  
 <212> DNA  
 <213> Neisseria meningitidis

<220>  
 <221> CDS  
 <222> (1)..(1659)

<400> 67  
 atg act gac aac agc cct cct cca aac gga cac gcc caa gca cgc gtc 48  
 Met Thr Asp Asn Ser Pro Pro Pro Asn Gly His Ala Gln Ala Arg Val  
 1 5 10 15  
 cgc aaa aac aac acc ttc ctc tct gcc gtc tgg ctg gtt ccg ctg atc 96  
 Arg Lys Asn Asn Thr Phe Leu Ser Ala Val Trp Leu Val Pro Leu Ile  
 20 25 30  
 gcg ctg att gcc ggc ggc tgg ctt tgg gtt aag gaa atc cgc aac agg 144  
 Ala Leu Ile Ala Gly Gly Trp Leu Trp Val Lys Glu Ile Arg Asn Arg

35	40	45	
ggg cct gtg gtt acg ctc ttg atg gac agc gcg gaa ggc att gag gtc			192
Gly Pro Val Val Thr Leu Leu Met Asp Ser Ala Glu Gly Ile Glu Val			
50	55	60	
aac aat acg gtc atc aaa gta ttg agc atc gat gtc gga cgc gtt acc			240
Asn Asn Thr Val Ile Lys Val Leu Ser Ile Asp Val Gly Arg Val Thr			
65	70	75	80
cga atc aaa ctg cgc gac gac caa aaa ggc gtg gaa gta acc gcc caa			288
Arg Ile Lys Leu Arg Asp Asp Gln Lys Gly Val Glu Val Thr Ala Gln			
85	90	95	
ctc aat gcg gac gta tcc ggc ctc atc cgc agc gat acc cag ttt tgg			336
Leu Asn Ala Asp Val Ser Gly Leu Ile Arg Ser Asp Thr Gln Phe Trp			
100	105	110	
gtg gtc aag ccg cgt atc gac caa agc ggc gta acc ggt ttg ggt acg			384
Val Val Lys Pro Arg Ile Asp Gln Ser Gly Val Thr Gly Leu Gly Thr			
115	120	125	
ctg ctt tcg ggt tcg tac atc gcc ttt aca ccc ggc aaa agc gac gag			432
Leu Leu Ser Gly Ser Tyr Ile Ala Phe Thr Pro Gly Lys Ser Asp Glu			
130	135	140	
gca aaa gac gtg ttc caa gtg cag gac att ccg ccc gtt acc gcc atc			480
Ala Lys Asp Val Phe Gln Val Gln Asp Ile Pro Pro Val Thr Ala Ile			
145	150	155	160
ggg caa agc ggg ctg cgc ttg aat ttg att ggt aaa aac gac cgc atc			528
Gly Gln Ser Gly Leu Arg Leu Asn Leu Ile Gly Lys Asn Asp Arg Ile			
165	170	175	
ctc aac gtc aac agc cct gtt ttg tat gaa aac ttt atg gtc ggg caa			576
Leu Asn Val Asn Ser Pro Val Leu Tyr Glu Asn Phe Met Val Gly Gln			
180	185	190	
gtc gaa agc gcg cat ttc gac ccg tcc gac caa agc gtg cat tac acc			624
Val Glu Ser Ala His Phe Asp Pro Ser Asp Gln Ser Val His Tyr Thr			
195	200	205	
atc ttc atc caa agc ccc aac gac aaa ctg att cat tcc gcc agc cgt			672
Ile Phe Ile Gln Ser Pro Asn Asp Lys Leu Ile His Ser Ala Ser Arg			
210	215	220	
ttc tgg ctg gaa agc ggc atc aat atc gaa acc aca ggc agc ggc atc			720
Phe Trp Leu Glu Ser Gly Ile Asn Ile Glu Thr Thr Gly Ser Gly Ile			

225	230	235	240	
aaa ctc aat tcc gcc cct ctg cct gcc ctg ctg tcg ggc gcg att tca				768
Lys Leu Asn Ser Ala Pro Leu Pro Ala Leu Leu Ser Gly Ala Ile Ser				
	245	250	255	
ttt gat tcg ccg aaa acc aaa aac agt aaa aac gtc aaa agc gaa gac				816
Phe Asp Ser Pro Lys Thr Lys Asn Ser Lys Asn Val Lys Ser Glu Asp				
	260	265	270	
agc ttc acg ctt tac gac agc cgc agc gaa gtc gcc aac ctg cct gat				864
Ser Phe Thr Leu Tyr Asp Ser Arg Ser Glu Val Ala Asn Leu Pro Asp				
	275	280	285	
gac cgt tcg ctg tac tac acc gcg ttt ttc aaa caa tcc gtg cgc gga				912
Asp Arg Ser Leu Tyr Tyr Thr Ala Phe Phe Lys Gln Ser Val Arg Gly				
	290	295	300	
ctg acc gtc ggt tcg cct gtc gag tac aaa ggg ctg aat gtc ggc gtg				960
Leu Thr Val Gly Ser Pro Val Glu Tyr Lys Gly Leu Asn Val Gly Val				
	305	310	315	320
gtt tcc gat gtt cct tat ttc gac cgc aac gac agc ctg cac ctg ttt				1008
Val Ser Asp Val Pro Tyr Phe Asp Arg Asn Asp Ser Leu His Leu Phe				
	325	330	335	
gaa aac ggc tgg att ccc gta cgc atc cgt att gag cct tcc cgt ttg				1056
Glu Asn Gly Trp Ile Pro Val Arg Ile Arg Ile Glu Pro Ser Arg Leu				
	340	345	350	
gaa atc aat gcc gac gaa caa agc aaa gaa cat tgg aaa caa caa ttt				1104
Glu Ile Asn Ala Asp Glu Gln Ser Lys Glu His Trp Lys Gln Gln Phe				
	355	360	365	
cag acg gcc tta aac aaa ggc ctg acc gcc acc atc tcc agc aac aac				1152
Gln Thr Ala Leu Asn Lys Gly Leu Thr Ala Thr Ile Ser Ser Asn Asn				
	370	375	380	
ctg ctg acc ggc agc aaa atg att gag ttg aac gat cag cct tcc gcc				1200
Leu Leu Thr Gly Ser Lys Met Ile Glu Leu Asn Asp Gln Pro Ser Ala				
	385	390	395	400
tcg ccc aag ctg cga ccg cat acc gtt tat gca ggc gat acc gtt atc				1248
Ser Pro Lys Leu Arg Pro His Thr Val Tyr Ala Gly Asp Thr Val Ile				
	405	410	415	
gcg acc cag ggc ggc ggt ttg gac gat ttg cag gtc aaa ttg gcg gat				1296
Ala Thr Gln Gly Gly Gly Leu Asp Asp Leu Gln Val Lys Leu Ala Asp				

420	425	430	
ttg ctg gac aag ttc gac aaa ctg cct tta gat aag acg gtt gcc gaa			1344
Leu Leu Asp Lys Phe Asp Lys Leu Pro Leu Asp Lys Thr Val Ala Glu			
435	440	445	
ttg aac ggt tcg ctt gcc gag ctc aaa tcc aca ctc aaa tct gcc aat			1392
Leu Asn Gly Ser Leu Ala Glu Leu Lys Ser Thr Leu Lys Ser Ala Asn			
450	455	460	
gcc gcc cta agc tcc atc gac aaa ctg gtc ggc aaa ccg cag aca caa			1440
Ala Ala Leu Ser Ser Ile Asp Lys Leu Val Gly Lys Pro Gln Thr Gln			
465	470	475	480
aac att ccg aac gaa ctg aac caa acc ctg aaa gag ttg cgc aca acc			1488
Asn Ile Pro Asn Glu Leu Asn Gln Thr Leu Lys Glu Leu Arg Thr Thr			
485	490	495	
ctg caa ggc gta tcg cct caa tcg cct atc tac ggc gac gta caa aat			1536
Leu Gln Gly Val Ser Pro Gln Ser Pro Ile Tyr Gly Asp Val Gln Asn			
500	505	510	
acg ctg caa agt ttg gac aaa acc tta aaa gac gtt caa ccc gtc att			1584
Thr Leu Gln Ser Leu Asp Lys Thr Leu Lys Asp Val Gln Pro Val Ile			
515	520	525	
aac act ttg aaa gaa aaa ccc aac gcg ctg att ttc aac agc agc agc			1632
Asn Thr Leu Lys Glu Lys Pro Asn Ala Leu Ile Phe Asn Ser Ser Ser			
530	535	540	
aaa gac cct atc ccg aaa gga agc cga			1659
Lys Asp Pro Ile Pro Lys Gly Ser Arg			
545	550		

&lt;210&gt; 68

&lt;211&gt; 553

&lt;212&gt; PRT

&lt;213&gt; Neisseria meningitidis

&lt;400&gt; 68

Met	Thr	Asp	Asn	Ser	Pro	Pro	Pro	Asn	Gly	His	Ala	Gln	Ala	Arg	Val
1				5					10					15	

Arg	Lys	Asn	Asn	Thr	Phe	Leu	Ser	Ala	Val	Trp	Leu	Val	Pro	Leu	Ile
		20						25					30		

Ala	Leu	Ile	Ala	Gly	Gly	Trp	Leu	Trp	Val	Lys	Glu	Ile	Arg	Asn	Arg
-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----



35	40	45
Gly Pro Val Val Thr Leu Leu Met Asp Ser Ala Glu Gly Ile Glu Val		
50	55	60
Asn Asn Thr Val Ile Lys Val Leu Ser Ile Asp Val Gly Arg Val Thr		
65	70	75 80
Arg Ile Lys Leu Arg Asp Asp Gln Lys Gly Val Glu Val Thr Ala Gln		
	85	90 95
Leu Asn Ala Asp Val Ser Gly Leu Ile Arg Ser Asp Thr Gln Phe Trp		
	100	105 110
Val Val Lys Pro Arg Ile Asp Gln Ser Gly Val Thr Gly Leu Gly Thr		
	115	120 125
Leu Leu Ser Gly Ser Tyr Ile Ala Phe Thr Pro Gly Lys Ser Asp Glu		
	130	135 140
Ala Lys Asp Val Phe Gln Val Gln Asp Ile Pro Pro Val Thr Ala Ile		
145	150	155 160
Gly Gln Ser Gly Leu Arg Leu Asn Leu Ile Gly Lys Asn Asp Arg Ile		
	165	170 175
Leu Asn Val Asn Ser Pro Val Leu Tyr Glu Asn Phe Met Val Gly Gln		
	180	185 190
Val Glu Ser Ala His Phe Asp Pro Ser Asp Gln Ser Val His Tyr Thr		
	195	200 205
Ile Phe Ile Gln Ser Pro Asn Asp Lys Leu Ile His Ser Ala Ser Arg		
	210	215 220
Phe Trp Leu Glu Ser Gly Ile Asn Ile Glu Thr Thr Gly Ser Gly Ile		
225	230	235 240
Lys Leu Asn Ser Ala Pro Leu Pro Ala Leu Leu Ser Gly Ala Ile Ser		
	245	250 255
Phe Asp Ser Pro Lys Thr Lys Asn Ser Lys Asn Val Lys Ser Glu Asp		
	260	265 270
Ser Phe Thr Leu Tyr Asp Ser Arg Ser Glu Val Ala Asn Leu Pro Asp		
	275	280 285
Asp Arg Ser Leu Tyr Tyr Thr Ala Phe Phe Lys Gln Ser Val Arg Gly		

290		295		300													
Leu Thr Val Gly Ser Pro Val Glu Tyr Lys Gly Leu Asn Val Gly Val																	
305		310		315												320	
Val Ser Asp Val Pro Tyr Phe Asp Arg Asn Asp Ser Leu His Leu Phe																	
		325		330												335	
Glu Asn Gly Trp Ile Pro Val Arg Ile Arg Ile Glu Pro Ser Arg Leu																	
		340		345												350	
Glu Ile Asn Ala Asp Glu Gln Ser Lys Glu His Trp Lys Gln Gln Phe																	
		355		360												365	
Gln Thr Ala Leu Asn Lys Gly Leu Thr Ala Thr Ile Ser Ser Asn Asn																	
		370		375												380	
Leu Leu Thr Gly Ser Lys Met Ile Glu Leu Asn Asp Gln Pro Ser Ala																	
385		390		395												400	
Ser Pro Lys Leu Arg Pro His Thr Val Tyr Ala Gly Asp Thr Val Ile																	
		405		410												415	
Ala Thr Gln Gly Gly Gly Leu Asp Asp Leu Gln Val Lys Leu Ala Asp																	
		420		425												430	
Leu Leu Asp Lys Phe Asp Lys Leu Pro Leu Asp Lys Thr Val Ala Glu																	
		435		440												445	
Leu Asn Gly Ser Leu Ala Glu Leu Lys Ser Thr Leu Lys Ser Ala Asn																	
		450		455												460	
Ala Ala Leu Ser Ser Ile Asp Lys Leu Val Gly Lys Pro Gln Thr Gln																	
465		470		475												480	
Asn Ile Pro Asn Glu Leu Asn Gln Thr Leu Lys Glu Leu Arg Thr Thr																	
		485		490												495	
Leu Gln Gly Val Ser Pro Gln Ser Pro Ile Tyr Gly Asp Val Gln Asn																	
		500		505												510	
Thr Leu Gln Ser Leu Asp Lys Thr Leu Lys Asp Val Gln Pro Val Ile																	
		515		520												525	
Asn Thr Leu Lys Glu Lys Pro Asn Ala Leu Ile Phe Asn Ser Ser Ser																	
		530		535												540	
Lys Asp Pro Ile Pro Lys Gly Ser Arg																	

545

550

&lt;210&gt; 69

&lt;211&gt; 330

&lt;212&gt; DNA

<213> *Neisseria meningitidis*

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(330)

&lt;400&gt; 69

ttg	ccg	ctg	ctt	tgt	tgt	ctt	tgg	ttt	tgg	cag	cct	gcg	gcg	gtg	aaa	48
Leu	Pro	Leu	Leu	Cys	Cys	Leu	Trp	Phe	Trp	Gln	Pro	Ala	Ala	Val	Lys	
1				5					10					15		

aag	ccg	ctg	aag	ctc	ccg	ctg	ctg	aag	cac	ctg	ccg	ccg	aag	ctc	ccg	96
Lys	Pro	Leu	Lys	Leu	Pro	Leu	Leu	Lys	His	Leu	Pro	Pro	Lys	Leu	Pro	
			20					25					30			

cta	ctg	aag	cac	ctg	ccg	ccg	aag	ctc	ccg	ctg	ctg	aag	cac	ctg	ccg	144
Leu	Leu	Lys	His	Leu	Pro	Pro	Lys	Leu	Pro	Leu	Leu	Lys	His	Leu	Pro	
		35					40					45				

ccg	aag	ctc	ctg	cta	ctg	aag	cac	ctg	ccg	ccg	aag	ctc	ccg	ctg	ctg	192
Pro	Lys	Leu	Leu	Leu	Leu	Lys	His	Leu	Pro	Pro	Lys	Leu	Pro	Leu	Leu	
	50					55					60					

aag	ctg	ccg	cta	ccg	aag	cac	ctg	ccg	ctg	aag	ctg	ccg	cta	ccg	aag	240
Lys	Leu	Pro	Leu	Pro	Lys	His	Leu	Pro	Leu	Lys	Leu	Pro	Leu	Pro	Lys	
65					70				75					80		

cac	ctg	ccg	ctg	aag	ctc	ctg	ctg	ccg	aag	ctg	caa	aat	aag	cat	ttt	288
His	Leu	Pro	Leu	Lys	Leu	Leu	Leu	Pro	Lys	Leu	Gln	Asn	Lys	His	Phe	
				85				90					95			

ccg	ctt	gca	aaa	aag	cag	gat	acg	ttc	agt	atc	ctg	ctt	ttt			330
Pro	Leu	Ala	Lys	Lys	Gln	Asp	Thr	Phe	Ser	Ile	Leu	Leu	Phe			
		100						105				110				

&lt;210&gt; 70

&lt;211&gt; 110

&lt;212&gt; PRT

<213> *Neisseria meningitidis*

&lt;400&gt; 70

Leu Pro Leu Leu Cys Cys Leu Trp Phe Trp Gln Pro Ala Ala Val Lys  
 1 5 10 15

Lys Pro Leu Lys Leu Pro Leu Leu Lys His Leu Pro Pro Lys Leu Pro  
 20 25 30

Leu Leu Lys His Leu Pro Pro Lys Leu Pro Leu Leu Lys His Leu Pro  
 35 40 45

Pro Lys Leu Leu Leu Leu Lys His Leu Pro Pro Lys Leu Pro Leu Leu  
 50 55 60

Lys Leu Pro Leu Pro Lys His Leu Pro Leu Lys Leu Pro Leu Pro Lys  
 65 70 75 80

His Leu Pro Leu Lys Leu Leu Leu Pro Lys Leu Gln Asn Lys His Phe  
 85 90 95

Pro Leu Ala Lys Lys Gln Asp Thr Phe Ser Ile Leu Leu Phe  
 100 105 110

&lt;210&gt; 71

&lt;211&gt; 2274

&lt;212&gt; DNA

&lt;213&gt; Neisseria meningitidis

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(2274)

&lt;400&gt; 71

atg aca aca tta cat ttc tca ggc ttc ccg cgt gtc ggt gcc ttc cgc 48  
 Met Thr Thr Leu His Phe Ser Gly Phe Pro Arg Val Gly Ala Phe Arg  
 1 5 10 15

gaa ttg aaa ttc gca caa gaa aaa tac tgg cgc aaa gaa atc agc gag 96  
 Glu Leu Lys Phe Ala Gln Glu Lys Tyr Trp Arg Lys Glu Ile Ser Glu  
 20 25 30

caa gaa ttg ctg gct gtt gct aaa gac ttg cgc gag aaa aac tgg aaa 144  
 Gln Glu Leu Leu Ala Val Ala Lys Asp Leu Arg Glu Lys Asn Trp Lys  
 35 40 45

cac cag gcc gct gcc aac gcc gat tac gtt gcc gta ggc gat ttc act 192  
 His Gln Ala Ala Ala Asn Ala Asp Tyr Val Ala Val Gly Asp Phe Thr

50	55	60	
ttc tac gac cac atc ctc gac ctg caa gtc gcc acc ggc gcg att ccc			240
Phe Tyr Asp His Ile Leu Asp Leu Gln Val Ala Thr Gly Ala Ile Pro			
65	70	75	80
gcc cgc ttc ggc ttc gac agc caa aac cta tct ttg gaa caa ttc ttc			288
Ala Arg Phe Gly Phe Asp Ser Gln Asn Leu Ser Leu Glu Gln Phe Phe			
	85	90	95
caa ctg gcg cgc ggt aac aaa gac caa ttc gct atc gaa atg acc aaa			336
Gln Leu Ala Arg Gly Asn Lys Asp Gln Phe Ala Ile Glu Met Thr Lys			
	100	105	110
tgg ttc gac acc aac tac cac tac ttg gtg cct gaa ttc cac gcc gat			384
Trp Phe Asp Thr Asn Tyr His Tyr Leu Val Pro Glu Phe His Ala Asp			
	115	120	125
acc gaa ttt aaa gcc aat gcc aaa cac tac gtt caa cag ctg caa gaa			432
Thr Glu Phe Lys Ala Asn Ala Lys His Tyr Val Gln Gln Leu Gln Glu			
	130	135	140
gcc caa gct ttg ggc ctg aaa gcc aaa ccg acc gtt gtg ggt ccg ttg			480
Ala Gln Ala Leu Gly Leu Lys Ala Lys Pro Thr Val Val Gly Pro Leu			
	145	150	155
act ttc ctg tgg gtc ggt aaa gaa aaa ggc gcc gtt gaa ttc gac cgt			528
Thr Phe Leu Trp Val Gly Lys Glu Lys Gly Ala Val Glu Phe Asp Arg			
	165	170	175
ctg agc ctg ttg cct aaa ctg ttg cct gtt tac gtt gaa atc ctg act			576
Leu Ser Leu Leu Pro Lys Leu Leu Pro Val Tyr Val Glu Ile Leu Thr			
	180	185	190
gct ttg gtt gaa gcc ggt gcc gag tgg att caa atc gac gag cct gct			624
Ala Leu Val Glu Ala Gly Ala Glu Trp Ile Gln Ile Asp Glu Pro Ala			
	195	200	205
ttg act gtt gac ctg cct aaa gaa tgg gta gaa gca tac aaa gac gtt			672
Leu Thr Val Asp Leu Pro Lys Glu Trp Val Glu Ala Tyr Lys Asp Val			
	210	215	220
tac gcc act ttg agc aaa gta agt gcc aaa atc ctg ctg agc act tac			720
Tyr Ala Thr Leu Ser Lys Val Ser Ala Lys Ile Leu Leu Ser Thr Tyr			
	225	230	235
ttc ggt tct gtt gcc gaa cac gcc gca ttg ttg aaa tcc ctg cct gtt			768
Phe Gly Ser Val Ala Glu His Ala Ala Leu Leu Lys Ser Leu Pro Val			

245	250	255	
gac ggc ctg cac atc gac ttg gta cgc gct cct gaa caa ctg gat gcg			816
Asp Gly Leu His Ile Asp Leu Val Arg Ala Pro Glu Gln Leu Asp Ala			
260	265	270	
ttc gcc gac tac gac aaa gtt ctg tct gcc ggc gtc att gac ggc cgc			864
Phe Ala Asp Tyr Asp Lys Val Leu Ser Ala Gly Val Ile Asp Gly Arg			
275	280	285	
aat att tgg cgc gcc aac ctg aac aaa gtt ttg gaa act gtt gag ctt			912
Asn Ile Trp Arg Ala Asn Leu Asn Lys Val Leu Glu Thr Val Glu Leu			
290	295	300	
ctg caa gcc aaa ctg ggc gac cgt ttg tgg att tcc agc tct tgc tcg			960
Leu Gln Ala Lys Leu Gly Asp Arg Leu Trp Ile Ser Ser Ser Cys Ser			
305	310	315	320
ctg ctg cac act ccg ttt gac ttg tca gtt gaa gaa aaa ctg aaa gcc			1008
Leu Leu His Thr Pro Phe Asp Leu Ser Val Glu Glu Lys Leu Lys Ala			
325	330	335	
aac aaa ccc gac ctg tac tct tgg ttg gca ttc acc ctg caa aaa acc			1056
Asn Lys Pro Asp Leu Tyr Ser Trp Leu Ala Phe Thr Leu Gln Lys Thr			
340	345	350	
caa gaa ttg cgc gtc ctg aaa gcc gca ttg aac gaa ggc cgt gat tct			1104
Gln Glu Leu Arg Val Leu Lys Ala Ala Leu Asn Glu Gly Arg Asp Ser			
355	360	365	
gtt gcc gaa gaa ctg gct gcc agc caa gct gct gcc gac tcc cgt gcc			1152
Val Ala Glu Glu Leu Ala Ala Ser Gln Ala Ala Ala Asp Ser Arg Ala			
370	375	380	
aac agc agc gaa atc cac cgt gca gac gtt gcc aaa cgc ctg gcc gat			1200
Asn Ser Ser Glu Ile His Arg Ala Asp Val Ala Lys Arg Leu Ala Asp			
385	390	395	400
ttg cct gcc aac gca gac caa cgc aaa tcc cca ttt gcc gac cgt atc			1248
Leu Pro Ala Asn Ala Asp Gln Arg Lys Ser Pro Phe Ala Asp Arg Ile			
405	410	415	
aaa gcg caa caa gca tgg ttg aac ctg cct ctg ctg ccg acg acc aac			1296
Lys Ala Gln Gln Ala Trp Leu Asn Leu Pro Leu Leu Pro Thr Thr Asn			
420	425	430	
atc ggt tct ttc ccg caa act acc gaa atc cgc caa gca cgc gca gcc			1344
Ile Gly Ser Phe Pro Gln Thr Thr Glu Ile Arg Gln Ala Arg Ala Ala			

435	440	445	
ttc aaa aaa ggc gaa ctg tct gcc gcc gat tac gaa gcc gcg atg aaa			1392
Phe Lys Lys Gly Glu Leu Ser Ala Ala Asp Tyr Glu Ala Ala Met Lys			
450	455	460	
aaa gaa atc gcc ttg gtg gtt gaa gag caa gaa aaa ctg gac ttg gac			1440
Lys Glu Ile Ala Leu Val Val Glu Glu Gln Glu Lys Leu Asp Leu Asp			
465	470	475	480
gta ctg gta cac ggc gaa gcc gag cgt aac gac atg gtt gaa tac ttc			1488
Val Leu Val His Gly Glu Ala Glu Arg Asn Asp Met Val Glu Tyr Phe			
	485	490	495
ggc gaa ttg ttg agc ggt ttt gca ttc acc caa tat ggc tgg gta caa			1536
Gly Glu Leu Leu Ser Gly Phe Ala Phe Thr Gln Tyr Gly Trp Val Gln			
	500	505	510
agc tac ggt tct cgc tgc gtt aaa cca ccg att atc ttc ggt gac gta			1584
Ser Tyr Gly Ser Arg Cys Val Lys Pro Pro Ile Ile Phe Gly Asp Val			
	515	520	525
agc cgt cct gaa gcc atg acc gta gct tgg tct act tac gca caa agc			1632
Ser Arg Pro Glu Ala Met Thr Val Ala Trp Ser Thr Tyr Ala Gln Ser			
	530	535	540
ctg acc aaa cgc ccg atg aaa ggt atg ttg acc ggc cct gta acc att			1680
Leu Thr Lys Arg Pro Met Lys Gly Met Leu Thr Gly Pro Val Thr Ile			
545	550	555	560
ctg caa tgg tct ttc gtc cgc aac gat att cct cgc tct acc gtg tgt			1728
Leu Gln Trp Ser Phe Val Arg Asn Asp Ile Pro Arg Ser Thr Val Cys			
	565	570	575
aaa caa atc gca ctg gct ctg aac gac gaa gta ttg gat ctg gaa aaa			1776
Lys Gln Ile Ala Leu Ala Leu Asn Asp Glu Val Leu Asp Leu Glu Lys			
	580	585	590
gca ggc atc aaa gtc atc caa atc gac gaa cct gcc atc cgc gaa ggc			1824
Ala Gly Ile Lys Val Ile Gln Ile Asp Glu Pro Ala Ile Arg Glu Gly			
	595	600	605
ctg cct ttg aaa cgt gcc gat tgg gat gcc tac ctg aac tgg gcc ggc			1872
Leu Pro Leu Lys Arg Ala Asp Trp Asp Ala Tyr Leu Asn Trp Ala Gly			
	610	615	620
gaa tct ttc cgc ctg tcc tct acc ggt tgc gaa gac agc act caa atc			1920
Glu Ser Phe Arg Leu Ser Ser Thr Gly Cys Glu Asp Ser Thr Gln Ile			

625	630	635	640	
cac acc cat atg tgc tac tct gag ttc aac gac atc ctg cct gcg att				1968
His Thr His Met Cys Tyr Ser Glu Phe Asn Asp Ile Leu Pro Ala Ile				
	645	650	655	
gct gca atg gat gcg gac gtg atc acc atc gag act tca cgt tcc gac				2016
Ala Ala Met Asp Ala Asp Val Ile Thr Ile Glu Thr Ser Arg Ser Asp				
	660	665	670	
atg gaa ctc ttg acc gcg ttc ggc gaa ttc aaa tac ccg aac gac atc				2064
Met Glu Leu Leu Thr Ala Phe Gly Glu Phe Lys Tyr Pro Asn Asp Ile				
	675	680	685	
ggc ccg ggg gtt tac gac atc cac agc ccg cgc gta ccg aca gaa gcc				2112
Gly Pro Gly Val Tyr Asp Ile His Ser Pro Arg Val Pro Thr Glu Ala				
	690	695	700	
gaa gtg gag cac ctg ttg cgc aaa gcc atc gag gtt gta ccg gtt gaa				2160
Glu Val Glu His Leu Leu Arg Lys Ala Ile Glu Val Val Pro Val Glu				
	705	710	715	720
cgt ctg tgg gtt aac ccg gac tgc ggc ctg aaa aca cgc ggc tgg aaa				2208
Arg Leu Trp Val Asn Pro Asp Cys Gly Leu Lys Thr Arg Gly Trp Lys				
	725	730	735	
gaa act ctg gaa caa ctc caa gtg atg atg aac gta acc cac aaa ttg				2256
Glu Thr Leu Glu Gln Leu Gln Val Met Met Asn Val Thr His Lys Leu				
	740	745	750	
cgt gcc gaa ttg gcg aaa				2274
Arg Ala Glu Leu Ala Lys				
	755			

&lt;210&gt; 72

&lt;211&gt; 758

&lt;212&gt; PRT

&lt;213&gt; Neisseria meningitidis

&lt;400&gt; 72

Met	Thr	Thr	Leu	His	Phe	Ser	Gly	Phe	Pro	Arg	Val	Gly	Ala	Phe	Arg
1				5				10					15		

Glu	Leu	Lys	Phe	Ala	Gln	Glu	Lys	Tyr	Trp	Arg	Lys	Glu	Ile	Ser	Glu
			20					25				30			

Gln	Glu	Leu	Leu	Ala	Val	Ala	Lys	Asp	Leu	Arg	Glu	Lys	Asn	Trp	Lys
-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----



35	40	45
His Gln Ala Ala Ala Asn Ala Asp Tyr Val Ala Val Gly Asp Phe Thr		
50	55	60
Phe Tyr Asp His Ile Leu Asp Leu Gln Val Ala Thr Gly Ala Ile Pro		
65	70	75 80
Ala Arg Phe Gly Phe Asp Ser Gln Asn Leu Ser Leu Glu Gln Phe Phe		
	85	90 95
Gln Leu Ala Arg Gly Asn Lys Asp Gln Phe Ala Ile Glu Met Thr Lys		
	100	105 110
Trp Phe Asp Thr Asn Tyr His Tyr Leu Val Pro Glu Phe His Ala Asp		
	115	120 125
Thr Glu Phe Lys Ala Asn Ala Lys His Tyr Val Gln Gln Leu Gln Glu		
	130	135 140
Ala Gln Ala Leu Gly Leu Lys Ala Lys Pro Thr Val Val Gly Pro Leu		
145	150	155 160
Thr Phe Leu Trp Val Gly Lys Glu Lys Gly Ala Val Glu Phe Asp Arg		
	165	170 175
Leu Ser Leu Leu Pro Lys Leu Leu Pro Val Tyr Val Glu Ile Leu Thr		
	180	185 190
Ala Leu Val Glu Ala Gly Ala Glu Trp Ile Gln Ile Asp Glu Pro Ala		
	195	200 205
Leu Thr Val Asp Leu Pro Lys Glu Trp Val Glu Ala Tyr Lys Asp Val		
	210	215 220
Tyr Ala Thr Leu Ser Lys Val Ser Ala Lys Ile Leu Leu Ser Thr Tyr		
225	230	235 240
Phe Gly Ser Val Ala Glu His Ala Ala Leu Leu Lys Ser Leu Pro Val		
	245	250 255
Asp Gly Leu His Ile Asp Leu Val Arg Ala Pro Glu Gln Leu Asp Ala		
	260	265 270
Phe Ala Asp Tyr Asp Lys Val Leu Ser Ala Gly Val Ile Asp Gly Arg		
	275	280 285
Asn Ile Trp Arg Ala Asn Leu Asn Lys Val Leu Glu Thr Val Glu Leu		

290		295		300
Leu Gln Ala Lys Leu Gly Asp Arg Leu Trp Ile Ser Ser Ser Cys Ser				
305		310		315 320
Leu Leu His Thr Pro Phe Asp Leu Ser Val Glu Glu Lys Leu Lys Ala				
	325		330	335
Asn Lys Pro Asp Leu Tyr Ser Trp Leu Ala Phe Thr Leu Gln Lys Thr				
	340		345	350
Gln Glu Leu Arg Val Leu Lys Ala Ala Leu Asn Glu Gly Arg Asp Ser				
	355		360	365
Val Ala Glu Glu Leu Ala Ala Ser Gln Ala Ala Ala Asp Ser Arg Ala				
	370		375	380
Asn Ser Ser Glu Ile His Arg Ala Asp Val Ala Lys Arg Leu Ala Asp				
385		390		395 400
Leu Pro Ala Asn Ala Asp Gln Arg Lys Ser Pro Phe Ala Asp Arg Ile				
	405		410	415
Lys Ala Gln Gln Ala Trp Leu Asn Leu Pro Leu Leu Pro Thr Thr Asn				
	420		425	430
Ile Gly Ser Phe Pro Gln Thr Thr Glu Ile Arg Gln Ala Arg Ala Ala				
	435		440	445
Phe Lys Lys Gly Glu Leu Ser Ala Ala Asp Tyr Glu Ala Ala Met Lys				
	450		455	460
Lys Glu Ile Ala Leu Val Val Glu Glu Gln Glu Lys Leu Asp Leu Asp				
465		470		475 480
Val Leu Val His Gly Glu Ala Glu Arg Asn Asp Met Val Glu Tyr Phe				
	485		490	495
Gly Glu Leu Leu Ser Gly Phe Ala Phe Thr Gln Tyr Gly Trp Val Gln				
	500		505	510
Ser Tyr Gly Ser Arg Cys Val Lys Pro Pro Ile Ile Phe Gly Asp Val				
	515		520	525
Ser Arg Pro Glu Ala Met Thr Val Ala Trp Ser Thr Tyr Ala Gln Ser				
	530		535	540
Leu Thr Lys Arg Pro Met Lys Gly Met Leu Thr Gly Pro Val Thr Ile				

545		550		555		560
Leu Gln Trp Ser Phe Val Arg Asn Asp Ile Pro Arg Ser Thr Val Cys						
	565		570		575	
Lys Gln Ile Ala Leu Ala Leu Asn Asp Glu Val Leu Asp Leu Glu Lys						
	580		585		590	
Ala Gly Ile Lys Val Ile Gln Ile Asp Glu Pro Ala Ile Arg Glu Gly						
	595		600		605	
Leu Pro Leu Lys Arg Ala Asp Trp Asp Ala Tyr Leu Asn Trp Ala Gly						
	610		615		620	
Glu Ser Phe Arg Leu Ser Ser Thr Gly Cys Glu Asp Ser Thr Gln Ile						
625		630		635		640
His Thr His Met Cys Tyr Ser Glu Phe Asn Asp Ile Leu Pro Ala Ile						
	645		650		655	
Ala Ala Met Asp Ala Asp Val Ile Thr Ile Glu Thr Ser Arg Ser Asp						
	660		665		670	
Met Glu Leu Leu Thr Ala Phe Gly Glu Phe Lys Tyr Pro Asn Asp Ile						
	675		680		685	
Gly Pro Gly Val Tyr Asp Ile His Ser Pro Arg Val Pro Thr Glu Ala						
	690		695		700	
Glu Val Glu His Leu Leu Arg Lys Ala Ile Glu Val Val Pro Val Glu						
705		710		715		720
Arg Leu Trp Val Asn Pro Asp Cys Gly Leu Lys Thr Arg Gly Trp Lys						
	725		730		735	
Glu Thr Leu Glu Gln Leu Gln Val Met Met Asn Val Thr His Lys Leu						
	740		745		750	
Arg Ala Glu Leu Ala Lys						
	755					

&lt;210&gt; 73

&lt;211&gt; 2118

&lt;212&gt; DNA

&lt;213&gt; Neisseria meningitidis

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(2118)

&lt;400&gt; 73

atg cgc cgt ttt cta ccg atc gca gcc ata tgc gcc gtc gtc ctg ttg	48
Met Arg Arg Phe Leu Pro Ile Ala Ala Ile Cys Ala Val Val Leu Leu	
1 5 10 15	
tac gga ctg acg gcg gca acc ggc agc acc agt tcg ctg gcg gat tat	96
Tyr Gly Leu Thr Ala Ala Thr Gly Ser Thr Ser Ser Leu Ala Asp Tyr	
20 25 30	
ttc tgg tgg att gtt gcg ttc agc gca atg ctg ctg ctg gtg ttg tcc	144
Phe Trp Trp Ile Val Ala Phe Ser Ala Met Leu Leu Leu Val Leu Ser	
35 40 45	
gcc gtt ttg gca cgt tat gtc ata ttg ctg ttg aaa gac agg cgc gac	192
Ala Val Leu Ala Arg Tyr Val Ile Leu Leu Leu Lys Asp Arg Arg Asp	
50 55 60	
ggc gta ttc ggt tcg cag att gcc aaa cgc ctt tcc ggg atg ttt acg	240
Gly Val Phe Gly Ser Gln Ile Ala Lys Arg Leu Ser Gly Met Phe Thr	
65 70 75 80	
ctg gtt gcc gta ctg ccc ggc gtg ttt ctg ttc ggc gtt tcc gca cag	288
Leu Val Ala Val Leu Pro Gly Val Phe Leu Phe Gly Val Ser Ala Gln	
85 90 95	
ttt atc aac ggc acg att aat tcg tgg ttc ggc aac gat acc cac gag	336
Phe Ile Asn Gly Thr Ile Asn Ser Trp Phe Gly Asn Asp Thr His Glu	
100 105 110	
gcg ctt gaa cgc agc ctc aat ttg agc aag tcc gca ttg aat ctg gcg	384
Ala Leu Glu Arg Ser Leu Asn Leu Ser Lys Ser Ala Leu Asn Leu Ala	
115 120 125	
gca gac aac gcc ctt ggc aac gcc atc ccc gtg cag ata gac ctc atc	432
Ala Asp Asn Ala Leu Gly Asn Ala Ile Pro Val Gln Ile Asp Leu Ile	
130 135 140	
ggc gcg gct tcc ctg ccc ggg gat atg ggc agg gtg ctg gaa cat tac	480
Gly Ala Ala Ser Leu Pro Gly Asp Met Gly Arg Val Leu Glu His Tyr	
145 150 155 160	
gcc ggc agc ggt ttt gcc cag ctt gcc ctg tac aat gcc gca agc ggc	528
Ala Gly Ser Gly Phe Ala Gln Leu Ala Leu Tyr Asn Ala Ala Ser Gly	
165 170 175	

aaa atc gaa aaa agc atc aac ccg cac aag ctc gat cag ccg ttt cca	576
Lys Ile Glu Lys Ser Ile Asn Pro His Lys Leu Asp Gln Pro Phe Pro	
180 185 190	
ggc aag gcg cgt tgg gaa aaa atc caa cag gcg ggt tcg gtc agg gat	624
Gly Lys Ala Arg Trp Glu Lys Ile Gln Gln Ala Gly Ser Val Arg Asp	
195 200 205	
ttg gaa agc ata ggc ggc gta ttg tac gcg cag ggc tgg ctg tcg gca	672
Leu Glu Ser Ile Gly Gly Val Leu Tyr Ala Gln Gly Trp Leu Ser Ala	
210 215 220	
ggc acg cac aac ggc cgc gat tac gcc ttg ttt ttc cgt cag ccg gtt	720
Gly Thr His Asn Gly Arg Asp Tyr Ala Leu Phe Phe Arg Gln Pro Val	
225 230 235 240	
ccc aaa ggc gtg gca gag gat gcc gtc tta atc gaa aag gca agg gcg	768
Pro Lys Gly Val Ala Glu Asp Ala Val Leu Ile Glu Lys Ala Arg Ala	
245 250 255	
aaa tat gct gag ttg agt tac agc aaa aaa ggt ttg cag acc ttt ttc	816
Lys Tyr Ala Glu Leu Ser Tyr Ser Lys Lys Gly Leu Gln Thr Phe Phe	
260 265 270	
ctg gca acc ctg ctg att gcc tcg ctg ctg tcg att ttt ctt gca ctg	864
Leu Ala Thr Leu Leu Ile Ala Ser Leu Leu Ser Ile Phe Leu Ala Leu	
275 280 285	
gtc atg gca ctg tat ttc gcc cgc cgt ttc gtc gaa ccc gtc cta tcg	912
Val Met Ala Leu Tyr Phe Ala Arg Arg Phe Val Glu Pro Val Leu Ser	
290 295 300	
ctt gcc gag ggc gcg aag gcg gtg gcg caa ggc gat ttc agc cag acg	960
Leu Ala Glu Gly Ala Lys Ala Val Ala Gln Gly Asp Phe Ser Gln Thr	
305 310 315 320	
cgc ccc gtg ttg cgc aac gac gag ttc gga cgc ttg acc aag ttg ttc	1008
Arg Pro Val Leu Arg Asn Asp Glu Phe Gly Arg Leu Thr Lys Leu Phe	
325 330 335	
aac cac atg acc gag cag ctt tcc atc gcc aaa gaa gca gac gag cgc	1056
Asn His Met Thr Glu Gln Leu Ser Ile Ala Lys Glu Ala Asp Glu Arg	
340 345 350	
aac cgc cgg cgc gag gaa gcc gcc aga cat tat ctc gaa tgc gtg ttg	1104
Asn Arg Arg Arg Glu Glu Ala Ala Arg His Tyr Leu Glu Cys Val Leu	
355 360 365	

gag ggg ctg acc acg ggc gtg gtg gtg ttt gac gaa caa ggc tgt ctg	1152
Glu Gly Leu Thr Thr Gly Val Val Val Phe Asp Glu Gln Gly Cys Leu	
370 375 380	
aaa acc ttc aac aaa gcg gcg gaa cag att ttg ggg atg ccg ctt acc	1200
Lys Thr Phe Asn Lys Ala Ala Glu Gln Ile Leu Gly Met Pro Leu Thr	
385 390 395 400	
ccc ctg tgg ggc agc agc cgg cac ggt tgg cac ggc gtt tcg gcg cag	1248
Pro Leu Trp Gly Ser Ser Arg His Gly Trp His Gly Val Ser Ala Gln	
405 410 415	
cag tcc ctg ctt gcc gaa gtg ttt gcc gcc atc ggc gcg gcg gca ggt	1296
Gln Ser Leu Leu Ala Glu Val Phe Ala Ala Ile Gly Ala Ala Ala Gly	
420 425 430	
acg gac aaa ccg gtc cat gtg aaa tat gcc gcg ccg gac gat gcc aaa	1344
Thr Asp Lys Pro Val His Val Lys Tyr Ala Ala Pro Asp Asp Ala Lys	
435 440 445	
atc ctg ctg ggc aag gca acc gtc ctg ccc gaa gac aac ggc aac ggc	1392
Ile Leu Leu Gly Lys Ala Thr Val Leu Pro Glu Asp Asn Gly Asn Gly	
450 455 460	
gtg gta atg gtg att gac gac atc acc gtt ttg ata cac gcg caa aaa	1440
Val Val Met Val Ile Asp Asp Ile Thr Val Leu Ile His Ala Gln Lys	
465 470 475 480	
gaa gcc gcg tgg ggc gaa gtg gca aaa cgg ctg gca cac gaa atc cgc	1488
Glu Ala Ala Trp Gly Glu Val Ala Lys Arg Leu Ala His Glu Ile Arg	
485 490 495	
aat ccg ctc acg ccc atc cag ctt tct gcc gaa ccg ctg gcg tgg aaa	1536
Asn Pro Leu Thr Pro Ile Gln Leu Ser Ala Glu Arg Leu Ala Trp Lys	
500 505 510	
ttg ggc ggg aag ctg gac gag cag gac gcg caa atc ctg aca cgt tcg	1584
Leu Gly Gly Lys Leu Asp Glu Gln Asp Ala Gln Ile Leu Thr Arg Ser	
515 520 525	
acc gac acc atc atc aaa caa gtg gcg gca tta aaa gaa atg gtc gag	1632
Thr Asp Thr Ile Ile Lys Gln Val Ala Ala Leu Lys Glu Met Val Glu	
530 535 540	
gca ttc cgc aat tac gcg cgt tcc cct tcg ctc aaa ttg gaa aat cag	1680
Ala Phe Arg Asn Tyr Ala Arg Ser Pro Ser Leu Lys Leu Glu Asn Gln	
545 550 555 560	

gat ttg aac gcc tta atc ggc gat gtg ttg gca ttg tac gaa gct ggt 1728  
 Asp Leu Asn Ala Leu Ile Gly Asp Val Leu Ala Leu Tyr Glu Ala Gly  
                   565                                  570                                  575

ccg tgc cgg ttt gcg gcg gaa ctt gcc ggc gaa ccg ctg atg atg gcg 1776  
 Pro Cys Arg Phe Ala Ala Glu Leu Ala Gly Glu Pro Leu Met Met Ala  
                   580                                  585                                  590

gcg gat acg acc gcc atg cgg cag gtg ctg cac aat att ttc aaa aat 1824  
 Ala Asp Thr Thr Ala Met Arg Gln Val Leu His Asn Ile Phe Lys Asn  
                   595                                  600                                  605

gcc gcc gaa gcg gcg gaa gaa gcc gat gtg ccc gaa gtc agg gta aaa 1872  
 Ala Ala Glu Ala Ala Glu Glu Ala Asp Val Pro Glu Val Arg Val Lys  
                   610                                  615                                  620

tcg gaa gcg ggg cag gac gga cgg att gtc ctg aca gtt tgc gac aac 1920  
 Ser Glu Ala Gly Gln Asp Gly Arg Ile Val Leu Thr Val Cys Asp Asn  
 625                                  630                                  635                                  640

ggc aag ggg ttc ggc agg gaa atg ctg cac aat gcc ttc gag ccg tat 1968  
 Gly Lys Gly Phe Gly Arg Glu Met Leu His Asn Ala Phe Glu Pro Tyr  
                   645                                  650                                  655

gta acg gac aaa ccg gct gga acg gga ttg gga ctg ccc gtg gtg aaa 2016  
 Val Thr Asp Lys Pro Ala Gly Thr Gly Leu Gly Leu Pro Val Val Lys  
                   660                                  665                                  670

aaa atc att gaa gaa cac ggc ggc cgc atc agc ctg agc aat cag gat 2064  
 Lys Ile Ile Glu Glu His Gly Gly Arg Ile Ser Leu Ser Asn Gln Asp  
                   675                                  680                                  685

gcg ggc ggc gcg tgt gtc aga atc atc ttg cca aaa acg gta gaa act 2112  
 Ala Gly Gly Ala Cys Val Arg Ile Ile Leu Pro Lys Thr Val Glu Thr  
                   690                                  695                                  700

tat gcg 2118  
 Tyr Ala  
 705

<210> 74

<211> 706

<212> PRT

<213> Neisseria meningitidis

<400> 74

Met Arg Arg Phe Leu Pro Ile Ala Ala Ile Cys Ala Val Val Leu Leu  
 1 5 10 15  
 Tyr Gly Leu Thr Ala Ala Thr Gly Ser Thr Ser Ser Leu Ala Asp Tyr  
 20 25 30  
 Phe Trp Trp Ile Val Ala Phe Ser Ala Met Leu Leu Leu Val Leu Ser  
 35 40 45  
 Ala Val Leu Ala Arg Tyr Val Ile Leu Leu Leu Lys Asp Arg Arg Asp  
 50 55 60  
 Gly Val Phe Gly Ser Gln Ile Ala Lys Arg Leu Ser Gly Met Phe Thr  
 65 70 75 80  
 Leu Val Ala Val Leu Pro Gly Val Phe Leu Phe Gly Val Ser Ala Gln  
 85 90 95  
 Phe Ile Asn Gly Thr Ile Asn Ser Trp Phe Gly Asn Asp Thr His Glu  
 100 105 110  
 Ala Leu Glu Arg Ser Leu Asn Leu Ser Lys Ser Ala Leu Asn Leu Ala  
 115 120 125  
 Ala Asp Asn Ala Leu Gly Asn Ala Ile Pro Val Gln Ile Asp Leu Ile  
 130 135 140  
 Gly Ala Ala Ser Leu Pro Gly Asp Met Gly Arg Val Leu Glu His Tyr  
 145 150 155 160  
 Ala Gly Ser Gly Phe Ala Gln Leu Ala Leu Tyr Asn Ala Ala Ser Gly  
 165 170 175  
 Lys Ile Glu Lys Ser Ile Asn Pro His Lys Leu Asp Gln Pro Phe Pro  
 180 185 190  
 Gly Lys Ala Arg Trp Glu Lys Ile Gln Gln Ala Gly Ser Val Arg Asp  
 195 200 205  
 Leu Glu Ser Ile Gly Gly Val Leu Tyr Ala Gln Gly Trp Leu Ser Ala  
 210 215 220  
 Gly Thr His Asn Gly Arg Asp Tyr Ala Leu Phe Phe Arg Gln Pro Val  
 225 230 235 240  
 Pro Lys Gly Val Ala Glu Asp Ala Val Leu Ile Glu Lys Ala Arg Ala  
 245 250 255



Lys	Tyr	Ala	Glu	Leu	Ser	Tyr	Ser	Lys	Lys	Gly	Leu	Gln	Thr	Phe	Phe	260	265	270
Leu	Ala	Thr	Leu	Leu	Ile	Ala	Ser	Leu	Leu	Ser	Ile	Phe	Leu	Ala	Leu	275	280	285
Val	Met	Ala	Leu	Tyr	Phe	Ala	Arg	Arg	Phe	Val	Glu	Pro	Val	Leu	Ser	290	295	300
Leu	Ala	Glu	Gly	Ala	Lys	Ala	Val	Ala	Gln	Gly	Asp	Phe	Ser	Gln	Thr	305	310	315
Arg	Pro	Val	Leu	Arg	Asn	Asp	Glu	Phe	Gly	Arg	Leu	Thr	Lys	Leu	Phe	325	330	335
Asn	His	Met	Thr	Glu	Gln	Leu	Ser	Ile	Ala	Lys	Glu	Ala	Asp	Glu	Arg	340	345	350
Asn	Arg	Arg	Arg	Glu	Glu	Ala	Ala	Arg	His	Tyr	Leu	Glu	Cys	Val	Leu	355	360	365
Glu	Gly	Leu	Thr	Thr	Gly	Val	Val	Val	Phe	Asp	Glu	Gln	Gly	Cys	Leu	370	375	380
Lys	Thr	Phe	Asn	Lys	Ala	Ala	Glu	Gln	Ile	Leu	Gly	Met	Pro	Leu	Thr	385	390	395
Pro	Leu	Trp	Gly	Ser	Ser	Arg	His	Gly	Trp	His	Gly	Val	Ser	Ala	Gln	405	410	415
Gln	Ser	Leu	Leu	Ala	Glu	Val	Phe	Ala	Ala	Ile	Gly	Ala	Ala	Ala	Gly	420	425	430
Thr	Asp	Lys	Pro	Val	His	Val	Lys	Tyr	Ala	Ala	Pro	Asp	Asp	Ala	Lys	435	440	445
Ile	Leu	Leu	Gly	Lys	Ala	Thr	Val	Leu	Pro	Glu	Asp	Asn	Gly	Asn	Gly	450	455	460
Val	Val	Met	Val	Ile	Asp	Asp	Ile	Thr	Val	Leu	Ile	His	Ala	Gln	Lys	465	470	475
Glu	Ala	Ala	Trp	Gly	Glu	Val	Ala	Lys	Arg	Leu	Ala	His	Glu	Ile	Arg	485	490	495
Asn	Pro	Leu	Thr	Pro	Ile	Gln	Leu	Ser	Ala	Glu	Arg	Leu	Ala	Trp	Lys	500	505	510

Leu Gly Gly Lys Leu Asp Glu Gln Asp Ala Gln Ile Leu Thr Arg Ser  
 515 520 525  
 Thr Asp Thr Ile Ile Lys Gln Val Ala Ala Leu Lys Glu Met Val Glu  
 530 535 540  
 Ala Phe Arg Asn Tyr Ala Arg Ser Pro Ser Leu Lys Leu Glu Asn Gln  
 545 550 555 560  
 Asp Leu Asn Ala Leu Ile Gly Asp Val Leu Ala Leu Tyr Glu Ala Gly  
 565 570 575  
 Pro Cys Arg Phe Ala Ala Glu Leu Ala Gly Glu Pro Leu Met Met Ala  
 580 585 590  
 Ala Asp Thr Thr Ala Met Arg Gln Val Leu His Asn Ile Phe Lys Asn  
 595 600 605  
 Ala Ala Glu Ala Ala Glu Glu Ala Asp Val Pro Glu Val Arg Val Lys  
 610 615 620  
 Ser Glu Ala Gly Gln Asp Gly Arg Ile Val Leu Thr Val Cys Asp Asn  
 625 630 635 640  
 Gly Lys Gly Phe Gly Arg Glu Met Leu His Asn Ala Phe Glu Pro Tyr  
 645 650 655  
 Val Thr Asp Lys Pro Ala Gly Thr Gly Leu Gly Leu Pro Val Val Lys  
 660 665 670  
 Lys Ile Ile Glu Glu His Gly Gly Arg Ile Ser Leu Ser Asn Gln Asp  
 675 680 685  
 Ala Gly Gly Ala Cys Val Arg Ile Ile Leu Pro Lys Thr Val Glu Thr  
 690 695 700  
 Tyr Ala  
 705

&lt;210&gt; 75

&lt;211&gt; 1686

&lt;212&gt; DNA

&lt;213&gt; Neisseria meningitidis

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(1686)

&lt;400&gt; 75

atg tta caa tcc gaa aat tcg aaa aat tta atc tct tgt tca ata aag	48
Met Leu Gln Ser Glu Asn Ser Lys Asn Leu Ile Ser Cys Ser Ile Lys	
1 5 10 15	
gct tta cca atc atg att tct acc aac ggc atc acc atg cag ttc ggc	96
Ala Leu Pro Ile Met Ile Ser Thr Asn Gly Ile Thr Met Gln Phe Gly	
20 25 30	
gcg aag ccg ctg ttt gaa aac gta tcc gtt aaa ttc ggc gaa ggc aac	144
Ala Lys Pro Leu Phe Glu Asn Val Ser Val Lys Phe Gly Glu Gly Asn	
35 40 45	
cgc tac ggt ttg atc ggc gcg aac ggc tca ggc aaa tcc acc ttc atg	192
Arg Tyr Gly Leu Ile Gly Ala Asn Gly Ser Gly Lys Ser Thr Phe Met	
50 55 60	
aaa atc ctc ggc ggc gat ttg gaa cag aca gcc ggc gaa gtg gcg att	240
Lys Ile Leu Gly Gly Asp Leu Glu Gln Thr Ala Gly Glu Val Ala Ile	
65 70 75 80	
gaa aac ggc gtg cgt ttg ggt aaa ttg cgc caa gac cag ttt gcc tac	288
Glu Asn Gly Val Arg Leu Gly Lys Leu Arg Gln Asp Gln Phe Ala Tyr	
85 90 95	
gaa gat atg cgc gtg ctg gac gtg gta atg atg ggt cac acc gaa atg	336
Glu Asp Met Arg Val Leu Asp Val Val Met Met Gly His Thr Glu Met	
100 105 110	
tgg gcg gcg atg acc gaa cgt gat gcg att tac gcc aat ccc gaa gcc	384
Trp Ala Ala Met Thr Glu Arg Asp Ala Ile Tyr Ala Asn Pro Glu Ala	
115 120 125	
acc gaa gac gac tac atg aaa gcc gca gaa ctg gaa gcc aag ttc gcc	432
Thr Glu Asp Asp Tyr Met Lys Ala Ala Glu Leu Glu Ala Lys Phe Ala	
130 135 140	
gaa tac gac ggc tac acc gcc gaa gcg cgt gcc gcc gag ttg ttg agc	480
Glu Tyr Asp Gly Tyr Thr Ala Glu Ala Arg Ala Ala Glu Leu Leu Ser	
145 150 155 160	
ggc gtg ggc att tcc gaa gat ttg cac aat gca acc atg gca gaa gtt	528
Gly Val Gly Ile Ser Glu Asp Leu His Asn Ala Thr Met Ala Glu Val	
165 170 175	
gcc ccg ggc ttc aaa ctg cgc gta ttg ctg gcg caa gcc ctg ttc tcc	576

Ala Pro Gly Phe Lys Leu Arg Val Leu Leu Ala Gln Ala Leu Phe Ser	
180	185 190
aag ccg gat gta ttg ctc ttg gac gaa ccg acc aat aac ttg gac att	624
Lys Pro Asp Val Leu Leu Leu Asp Glu Pro Thr Asn Asn Leu Asp Ile	
195	200 205
aat acc atc cgt tgg ttg gaa ggc gtg ttg aac cag tac gac tcc acg	672
Asn Thr Ile Arg Trp Leu Glu Gly Val Leu Asn Gln Tyr Asp Ser Thr	
210	215 220
atg att atc atc tcg cac gac cgc cac ttc ttg aac gaa gtc tgc acg	720
Met Ile Ile Ile Ser His Asp Arg His Phe Leu Asn Glu Val Cys Thr	
225	230 235 240
cat atg gca gat ttg gat tac aac acc atc acc atc tat ccg ggc aac	768
His Met Ala Asp Leu Asp Tyr Asn Thr Ile Thr Ile Tyr Pro Gly Asn	
245	250 255
tac gac gac tat atg ctc gcc tcc gcc caa tcg cgc gaa cgc gcc ctg	816
Tyr Asp Asp Tyr Met Leu Ala Ser Ala Gln Ser Arg Glu Arg Ala Leu	
260	265 270
aaa gac aat gcc aag gcg aag gaa aaa ttg cag gaa ttg caa gaa ttt	864
Lys Asp Asn Ala Lys Ala Lys Glu Lys Leu Gln Glu Leu Gln Glu Phe	
275	280 285
gtg gcg cgg ttc agt gcc aac aaa tcc aaa gcc cgt cag gca acc agc	912
Val Ala Arg Phe Ser Ala Asn Lys Ser Lys Ala Arg Gln Ala Thr Ser	
290	295 300
cgt ctg aaa cag gca gac aaa atc aaa tcg gag atg gtc gag gtc aaa	960
Arg Leu Lys Gln Ala Asp Lys Ile Lys Ser Glu Met Val Glu Val Lys	
305	310 315 320
ccc tct acc cgt caa aac ccg tat atc cgt ttt gaa gcc gat gaa aaa	1008
Pro Ser Thr Arg Gln Asn Pro Tyr Ile Arg Phe Glu Ala Asp Glu Lys	
325	330 335
gcc aag ctg cac cgt cag gct gtg gaa gtt gaa aaa ctg gcg aaa cgc	1056
Ala Lys Leu His Arg Gln Ala Val Glu Val Glu Lys Leu Ala Lys Arg	
340	345 350
ttt gaa acc cag ttg ttt aaa aac ctg aac ttt atc ctt gaa gcg gga	1104
Phe Glu Thr Gln Leu Phe Lys Asn Leu Asn Phe Ile Leu Glu Ala Gly	
355	360 365
caa cgc ctc gcc atc atc ggc ccg aac ggc gcg ggc aaa tcc acc ctg	1152

Gln	Arg	Leu	Ala	Ile	Ile	Gly	Pro	Asn	Gly	Ala	Gly	Lys	Ser	Thr	Leu		
370						375					380						
ctg	aaa	ctc	ttg	gcc	ggc	gcg	tac	aac	ccc	gaa	tat	tca	gac	ggt	ctg	1200	
Leu	Lys	Leu	Leu	Ala	Gly	Ala	Tyr	Asn	Pro	Glu	Tyr	Ser	Asp	Gly	Leu		
385					390					395					400		
ctg	ccg	gac	gaa	ggc	agc	atc	aaa	tgg	gcg	gaa	aaa	gcc	agc	gtc	ggc	1248	
Leu	Pro	Asp	Glu	Gly	Ser	Ile	Lys	Trp	Ala	Glu	Lys	Ala	Ser	Val	Gly		
				405					410					415			
tac	tat	ccg	caa	gat	cac	gaa	aac	gac	ttc	gat	gtc	gat	atg	gat	ttg	1296	
Tyr	Tyr	Pro	Gln	Asp	His	Glu	Asn	Asp	Phe	Asp	Val	Asp	Met	Asp	Leu		
			420					425					430				
agc	gaa	tgg	atg	cgc	caa	tgg	ggg	cag	gac	ggc	gac	gac	gaa	caa	gtc	1344	
Ser	Glu	Trp	Met	Arg	Gln	Trp	Gly	Gln	Asp	Gly	Asp	Asp	Glu	Gln	Val		
		435					440					445					
atc	cgc	ggc	act	ttg	ggg	cgt	ttg	ctc	ttc	ggc	agt	aac	gat	gtc	gtg	1392	
Ile	Arg	Gly	Thr	Leu	Gly	Arg	Leu	Leu	Phe	Gly	Ser	Asn	Asp	Val	Val		
		450				455					460						
aaa	aaa	gtg	aag	gtt	ctc	tcc	ggt	ggt	gaa	aaa	ggc	cgt	atg	ctt	tac	1440	
Lys	Lys	Val	Lys	Val	Leu	Ser	Gly	Gly	Glu	Lys	Gly	Arg	Met	Leu	Tyr		
465					470					475					480		
ggc	aaa	ctg	ttg	ctg	ttg	aaa	ccc	aat	gtc	tta	gtc	atg	gat	gaa	ccg	1488	
Gly	Lys	Leu	Leu	Leu	Leu	Lys	Pro	Asn	Val	Leu	Val	Met	Asp	Glu	Pro		
				485					490					495			
acc	aac	cac	atg	gac	atg	gaa	agc	atc	gaa	tcc	ttg	aac	atg	gcg	ctg	1536	
Thr	Asn	His	Met	Asp	Met	Glu	Ser	Ile	Glu	Ser	Leu	Asn	Met	Ala	Leu		
			500					505					510				
gaa	aaa	tac	aac	ggc	acg	ctg	att	ttc	gtc	tcc	cac	gac	cgt	cag	ttc	1584	
Glu	Lys	Tyr	Asn	Gly	Thr	Leu	Ile	Phe	Val	Ser	His	Asp	Arg	Gln	Phe		
		515					520					525					
gtt	tct	tcc	ctg	gct	acc	caa	atc	att	gaa	ttg	gac	ggc	aaa	ggc	gga	1632	
Val	Ser	Ser	Leu	Ala	Thr	Gln	Ile	Ile	Glu	Leu	Asp	Gly	Lys	Gly	Gly		
		530				535					540						
tat	gaa	cac	tac	ttg	ggc	gat	tac	gaa	agc	tat	ctc	gag	aaa	aaa	ggc	1680	
Tyr	Glu	His	Tyr	Leu	Gly	Asp	Tyr	Glu	Ser	Tyr	Leu	Glu	Lys	Lys	Gly		
545					550					555					560		
gta	gca															1686	

Val Ala

&lt;210&gt; 76

&lt;211&gt; 562

&lt;212&gt; PRT

&lt;213&gt; Neisseria meningitidis

&lt;400&gt; 76

Met	Leu	Gln	Ser	Glu	Asn	Ser	Lys	Asn	Leu	Ile	Ser	Cys	Ser	Ile	Lys
1				5					10					15	

Ala	Leu	Pro	Ile	Met	Ile	Ser	Thr	Asn	Gly	Ile	Thr	Met	Gln	Phe	Gly
			20					25					30		

Ala	Lys	Pro	Leu	Phe	Glu	Asn	Val	Ser	Val	Lys	Phe	Gly	Glu	Gly	Asn
		35					40					45			

Arg	Tyr	Gly	Leu	Ile	Gly	Ala	Asn	Gly	Ser	Gly	Lys	Ser	Thr	Phe	Met
	50					55					60				

Lys	Ile	Leu	Gly	Gly	Asp	Leu	Glu	Gln	Thr	Ala	Gly	Glu	Val	Ala	Ile
65					70					75					80

Glu	Asn	Gly	Val	Arg	Leu	Gly	Lys	Leu	Arg	Gln	Asp	Gln	Phe	Ala	Tyr
			85						90					95	

Glu	Asp	Met	Arg	Val	Leu	Asp	Val	Val	Met	Met	Gly	His	Thr	Glu	Met
		100						105					110		

Trp	Ala	Ala	Met	Thr	Glu	Arg	Asp	Ala	Ile	Tyr	Ala	Asn	Pro	Glu	Ala
		115					120					125			

Thr	Glu	Asp	Asp	Tyr	Met	Lys	Ala	Ala	Glu	Leu	Glu	Ala	Lys	Phe	Ala
	130					135					140				

Glu	Tyr	Asp	Gly	Tyr	Thr	Ala	Glu	Ala	Arg	Ala	Ala	Glu	Leu	Leu	Ser
145					150				155						160

Gly	Val	Gly	Ile	Ser	Glu	Asp	Leu	His	Asn	Ala	Thr	Met	Ala	Glu	Val
			165						170					175	

Ala	Pro	Gly	Phe	Lys	Leu	Arg	Val	Leu	Leu	Ala	Gln	Ala	Leu	Phe	Ser
			180					185					190		

Lys	Pro	Asp	Val	Leu	Leu	Leu	Asp	Glu	Pro	Thr	Asn	Asn	Leu	Asp	Ile
		195					200					205			

Asn Thr Ile Arg Trp Leu Glu Gly Val Leu Asn Gln Tyr Asp Ser Thr  
 210 215 220  
 Met Ile Ile Ile Ser His Asp Arg His Phe Leu Asn Glu Val Cys Thr  
 225 230 235 240  
 His Met Ala Asp Leu Asp Tyr Asn Thr Ile Thr Ile Tyr Pro Gly Asn  
 245 250 255  
 Tyr Asp Asp Tyr Met Leu Ala Ser Ala Gln Ser Arg Glu Arg Ala Leu  
 260 265 270  
 Lys Asp Asn Ala Lys Ala Lys Glu Lys Leu Gln Glu Leu Gln Glu Phe  
 275 280 285  
 Val Ala Arg Phe Ser Ala Asn Lys Ser Lys Ala Arg Gln Ala Thr Ser  
 290 295 300  
 Arg Leu Lys Gln Ala Asp Lys Ile Lys Ser Glu Met Val Glu Val Lys  
 305 310 315 320  
 Pro Ser Thr Arg Gln Asn Pro Tyr Ile Arg Phe Glu Ala Asp Glu Lys  
 325 330 335  
 Ala Lys Leu His Arg Gln Ala Val Glu Val Glu Lys Leu Ala Lys Arg  
 340 345 350  
 Phe Glu Thr Gln Leu Phe Lys Asn Leu Asn Phe Ile Leu Glu Ala Gly  
 355 360 365  
 Gln Arg Leu Ala Ile Ile Gly Pro Asn Gly Ala Gly Lys Ser Thr Leu  
 370 375 380  
 Leu Lys Leu Leu Ala Gly Ala Tyr Asn Pro Glu Tyr Ser Asp Gly Leu  
 385 390 395 400  
 Leu Pro Asp Glu Gly Ser Ile Lys Trp Ala Glu Lys Ala Ser Val Gly  
 405 410 415  
 Tyr Tyr Pro Gln Asp His Glu Asn Asp Phe Asp Val Asp Met Asp Leu  
 420 425 430  
 Ser Glu Trp Met Arg Gln Trp Gly Gln Asp Gly Asp Asp Glu Gln Val  
 435 440 445  
 Ile Arg Gly Thr Leu Gly Arg Leu Leu Phe Gly Ser Asn Asp Val Val  
 450 455 460

Lys Lys Val Lys Val Leu Ser Gly Gly Glu Lys Gly Arg Met Leu Tyr  
 465 470 475 480

Gly Lys Leu Leu Leu Leu Lys Pro Asn Val Leu Val Met Asp Glu Pro  
 485 490 495

Thr Asn His Met Asp Met Glu Ser Ile Glu Ser Leu Asn Met Ala Leu  
 500 505 510

Glu Lys Tyr Asn Gly Thr Leu Ile Phe Val Ser His Asp Arg Gln Phe  
 515 520 525

Val Ser Ser Leu Ala Thr Gln Ile Ile Glu Leu Asp Gly Lys Gly Gly  
 530 535 540

Tyr Glu His Tyr Leu Gly Asp Tyr Glu Ser Tyr Leu Glu Lys Lys Gly  
 545 550 555 560

Val Ala

<210> 77

<211> 1773

<212> DNA

<213> Neisseria meningitidis

<220>

<221> CDS

<222> (1)..(1773)

<400> 77

atg agt atc gtg ctg cac ggc gtg gcg gcg ggc aaa ggc att gcc gtc 48

Met Ser Ile Val Leu His Gly Val Ala Ala Gly Lys Gly Ile Ala Val

1 5 10 15

ggc tgc gcc cac ctg att gcg cgc ggt acg gag gaa gtg ccg cag tat 96

Gly Cys Ala His Leu Ile Ala Arg Gly Thr Glu Glu Val Pro Gln Tyr

20 25 30

gat gtt gcg gag gcg gac acc gat gcc gaa gcc gaa cgt ttc gat gcc 144

Asp Val Ala Glu Ala Asp Thr Asp Ala Glu Ala Glu Arg Phe Asp Ala

35 40 45

gcc gtc aaa gcc acg cgc aaa gag ttg gaa cag ctg cgc agc gcg att 192

Ala Val Lys Ala Thr Arg Lys Glu Leu Glu Gln Leu Arg Ser Ala Ile

50 55 60



ccc gaa aac gcc ccg acc gag ttg ggc gcg ttc atc tcg ctg cac ctg	240
Pro Glu Asn Ala Pro Thr Glu Leu Gly Ala Phe Ile Ser Leu His Leu	
65 70 75 80	
atg ctc ttg acc gat gtt acc ttg tcg cgc gaa ccc gtc gat att tta	288
Met Leu Leu Thr Asp Val Thr Leu Ser Arg Glu Pro Val Asp Ile Leu	
85 90 95	
agg gaa caa aaa atc aac gcc gag tgg gca ttg aag cag cag agc gac	336
Arg Glu Gln Lys Ile Asn Ala Glu Trp Ala Leu Lys Gln Gln Ser Asp	
100 105 110	
aaa ctc gcc gcc caa ttc gac aat atg gac gat gcc tat ttg cgc gaa	384
Lys Leu Ala Ala Gln Phe Asp Asn Met Asp Asp Ala Tyr Leu Arg Glu	
115 120 125	
cgc aag cag gat atg ctg caa gtc gtc cgc cgc atc cac aac aac ctg	432
Arg Lys Gln Asp Met Leu Gln Val Val Arg Arg Ile His Asn Asn Leu	
130 135 140	
atc ggg cag ggc aac gag ttg gaa gtt gcc gac aac ctg ttt gac gaa	480
Ile Gly Gln Gly Asn Glu Leu Glu Val Ala Asp Asn Leu Phe Asp Glu	
145 150 155 160	
acc gtt ctg att gca aac gac ctt tcg ccc gcc gac acg gtt ttg ttt	528
Thr Val Leu Ile Ala Asn Asp Leu Ser Pro Ala Asp Thr Val Leu Phe	
165 170 175	
aaa gag cag cgc att gcc gcc ttc gtt acc gat gcc ggc ggc ccc acc	576
Lys Glu Gln Arg Ile Ala Ala Phe Val Thr Asp Ala Gly Gly Pro Thr	
180 185 190	
ggg cat acg gcg att ttg ggc agg agc ttg gac atc ccg tcc gtc gtc	624
Gly His Thr Ala Ile Leu Gly Arg Ser Leu Asp Ile Pro Ser Val Val	
195 200 205	
ggg ctg cac aac gcg cgc aaa ctg att acc gag ggc gaa acg gtc att	672
Gly Leu His Asn Ala Arg Lys Leu Ile Thr Glu Gly Glu Thr Val Ile	
210 215 220	
gtg gac ggt atc aac ggc gtg ttg att atc gcg ccg gat gag tcg gtg	720
Val Asp Gly Ile Asn Gly Val Leu Ile Ile Ala Pro Asp Glu Ser Val	
225 230 235 240	
ttg aac gaa tac cgc cgc cgt gcc cgc gaa tac cgc agc cac aaa cgc	768
Leu Asn Glu Tyr Arg Arg Arg Ala Arg Glu Tyr Arg Ser His Lys Arg	
245 250 255	

gat ttg aac aag ctc aaa aaa acc gcc gcc gcc acc gct gac ggg gtc	816
Asp Leu Asn Lys Leu Lys Lys Thr Ala Ala Ala Thr Ala Asp Gly Val	
260 265 270	
tgk atc gag ctt gtg ggc aat ata gaa tcc gcc gaa gac gtg aaa ccg	864
Cys Ile Glu Leu Val Gly Asn Ile Glu Ser Ala Glu Asp Val Lys Pro	
275 280 285	
ctg cac aac ctc ggc gca gac ggc atc ggg ctg ttc cgc agc gag ttt	912
Leu His Asn Leu Gly Ala Asp Gly Ile Gly Leu Phe Arg Ser Glu Phe	
290 295 300	
ctt tac ctg aac cgc gat acg atg ccg tct gaa gac gag cag tac gaa	960
Leu Tyr Leu Asn Arg Asp Thr Met Pro Ser Glu Asp Glu Gln Tyr Glu	
305 310 315 320	
gtg tac agc gcg att gtc aaa aaa atg aaa ggc aaa agc gta acg ata	1008
Val Tyr Ser Ala Ile Val Lys Lys Met Lys Gly Lys Ser Val Thr Ile	
325 330 335	
cgg aca gtc gat ttg ggt gtg gac aaa aac ccg cgc tgg ttc ggg aaa	1056
Arg Thr Val Asp Leu Gly Val Asp Lys Asn Pro Arg Trp Phe Gly Lys	
340 345 350	
aac agc acg ccc aac ggc agc ctc aac ccc gcg ctg ggc atg acc ggc	1104
Asn Ser Thr Pro Asn Gly Ser Leu Asn Pro Ala Leu Gly Met Thr Gly	
355 360 365	
atc cgc ctg tgc ctt gcc gaa ccg gtc atg ttc cgc acc cag atg cgc	1152
Ile Arg Leu Cys Leu Ala Glu Pro Val Met Phe Arg Thr Gln Met Arg	
370 375 380	
gcc atc ctc cgc gcc gcc gcc cac ggc ccc gtg cgg atg atg tgg ccg	1200
Ala Ile Leu Arg Ala Ala Ala His Gly Pro Val Arg Met Met Trp Pro	
385 390 395 400	
atg att acc tcc gta tcc gaa gtg cgc cag tgc ctc atc cac ctc gac	1248
Met Ile Thr Ser Val Ser Glu Val Arg Gln Cys Leu Ile His Leu Asp	
405 410 415	
acc gcg caa cgc cag ctt gcc gaa cgc ggc gat gcc ttc ggt aaa gtc	1296
Thr Ala Gln Arg Gln Leu Ala Glu Arg Gly Asp Ala Phe Gly Lys Val	
420 425 430	
ggc atc ggc tgt atg att gaa att ccg tct gcc gcg ctg acc gtc ggc	1344
Gly Ile Gly Cys Met Ile Glu Ile Pro Ser Ala Ala Leu Thr Val Gly	
435 440 445	

agt att ttg aaa ctg gtc gat ttc atc tcc gtc ggt acc aac gac ctg 1392  
 Ser Ile Leu Lys Leu Val Asp Phe Ile Ser Val Gly Thr Asn Asp Leu  
 450 455 460

att caa tac atc ttg tcc gtc gat cgc ggc gac gac agc gtc agc cac 1440  
 Ile Gln Tyr Ile Leu Ser Val Asp Arg Gly Asp Asp Ser Val Ser His  
 465 470 475 480

ctc tac cag ccc ggc cat ccc gcc gtg ctg aaa atg ctg caa cac gtc 1488  
 Leu Tyr Gln Pro Gly His Pro Ala Val Leu Lys Met Leu Gln His Val  
 485 490 495

atc cgt acc gcc aac cgc atg gac aaa gac gta tcc gta tgc ggc gag 1536  
 Ile Arg Thr Ala Asn Arg Met Asp Lys Asp Val Ser Val Cys Gly Glu  
 500 505 510

atg gcg ggc gat acc gcg ttt acc cgc gtt tta ttg ggt atg ggg ctg 1584  
 Met Ala Gly Asp Thr Ala Phe Thr Arg Val Leu Leu Gly Met Gly Leu  
 515 520 525

cgc cgt ttt tcc atg aac ccc aac aac atc ctg ccc gtc aaa aac atc 1632  
 Arg Arg Phe Ser Met Asn Pro Asn Asn Ile Leu Pro Val Lys Asn Ile  
 530 535 540

att ctg cac agc aat gtc gga cag ctc gaa agc gat att gtg aaa gtc 1680  
 Ile Leu His Ser Asn Val Gly Gln Leu Glu Ser Asp Ile Val Lys Val  
 545 550 555 560

atc cgc tgc gaa gac gaa gag aag tcg gaa aag ctg atc aaa cag atg 1728  
 Ile Arg Cys Glu Asp Glu Glu Lys Ser Glu Lys Leu Ile Lys Gln Met  
 565 570 575

aac agc gtg tct gtc gag gaa gaa gcc gac ttc aag ggg cgg aaa 1773  
 Asn Ser Val Ser Val Glu Glu Glu Ala Asp Phe Lys Gly Arg Lys  
 580 585 590

<210> 78

<211> 591

<212> PRT

<213> Neisseria meningitidis

<400> 78

Met Ser Ile Val Leu His Gly Val Ala Ala Gly Lys Gly Ile Ala Val  
 1 5 10 15

Gly Cys Ala His Leu Ile Ala Arg Gly Thr Glu Glu Val Pro Gln Tyr

20	25	30
Asp Val Ala Glu Ala Asp Thr Asp Ala Glu Ala Glu Arg Phe Asp Ala		
35	40	45
Ala Val Lys Ala Thr Arg Lys Glu Leu Glu Gln Leu Arg Ser Ala Ile		
50	55	60
Pro Glu Asn Ala Pro Thr Glu Leu Gly Ala Phe Ile Ser Leu His Leu		
65	70	75
Met Leu Leu Thr Asp Val Thr Leu Ser Arg Glu Pro Val Asp Ile Leu		
85	90	95
Arg Glu Gln Lys Ile Asn Ala Glu Trp Ala Leu Lys Gln Gln Ser Asp		
100	105	110
Lys Leu Ala Ala Gln Phe Asp Asn Met Asp Asp Ala Tyr Leu Arg Glu		
115	120	125
Arg Lys Gln Asp Met Leu Gln Val Val Arg Arg Ile His Asn Asn Leu		
130	135	140
Ile Gly Gln Gly Asn Glu Leu Glu Val Ala Asp Asn Leu Phe Asp Glu		
145	150	155
Thr Val Leu Ile Ala Asn Asp Leu Ser Pro Ala Asp Thr Val Leu Phe		
165	170	175
Lys Glu Gln Arg Ile Ala Ala Phe Val Thr Asp Ala Gly Gly Pro Thr		
180	185	190
Gly His Thr Ala Ile Leu Gly Arg Ser Leu Asp Ile Pro Ser Val Val		
195	200	205
Gly Leu His Asn Ala Arg Lys Leu Ile Thr Glu Gly Glu Thr Val Ile		
210	215	220
Val Asp Gly Ile Asn Gly Val Leu Ile Ile Ala Pro Asp Glu Ser Val		
225	230	235
Leu Asn Glu Tyr Arg Arg Arg Ala Arg Glu Tyr Arg Ser His Lys Arg		
245	250	255
Asp Leu Asn Lys Leu Lys Lys Thr Ala Ala Ala Thr Ala Asp Gly Val		
260	265	270
Cys Ile Glu Leu Val Gly Asn Ile Glu Ser Ala Glu Asp Val Lys Pro		

275		280		285
Leu His Asn Leu Gly Ala Asp Gly Ile Gly Leu Phe Arg Ser Glu Phe				
290		295		300
Leu Tyr Leu Asn Arg Asp Thr Met Pro Ser Glu Asp Glu Gln Tyr Glu				
305		310		315 320
Val Tyr Ser Ala Ile Val Lys Lys Met Lys Gly Lys Ser Val Thr Ile				
	325		330	335
Arg Thr Val Asp Leu Gly Val Asp Lys Asn Pro Arg Trp Phe Gly Lys				
	340		345	350
Asn Ser Thr Pro Asn Gly Ser Leu Asn Pro Ala Leu Gly Met Thr Gly				
	355		360	365
Ile Arg Leu Cys Leu Ala Glu Pro Val Met Phe Arg Thr Gln Met Arg				
	370		375	380
Ala Ile Leu Arg Ala Ala Ala His Gly Pro Val Arg Met Met Trp Pro				
385		390		395 400
Met Ile Thr Ser Val Ser Glu Val Arg Gln Cys Leu Ile His Leu Asp				
	405		410	415
Thr Ala Gln Arg Gln Leu Ala Glu Arg Gly Asp Ala Phe Gly Lys Val				
	420		425	430
Gly Ile Gly Cys Met Ile Glu Ile Pro Ser Ala Ala Leu Thr Val Gly				
	435		440	445
Ser Ile Leu Lys Leu Val Asp Phe Ile Ser Val Gly Thr Asn Asp Leu				
	450		455	460
Ile Gln Tyr Ile Leu Ser Val Asp Arg Gly Asp Asp Ser Val Ser His				
465		470		475 480
Leu Tyr Gln Pro Gly His Pro Ala Val Leu Lys Met Leu Gln His Val				
	485		490	495
Ile Arg Thr Ala Asn Arg Met Asp Lys Asp Val Ser Val Cys Gly Glu				
	500		505	510
Met Ala Gly Asp Thr Ala Phe Thr Arg Val Leu Leu Gly Met Gly Leu				
	515		520	525
Arg Arg Phe Ser Met Asn Pro Asn Asn Ile Leu Pro Val Lys Asn Ile				

530	535	540
Ile Leu His Ser Asn Val Gly Gln Leu Glu Ser Asp Ile Val Lys Val		
545	550	555 560
Ile Arg Cys Glu Asp Glu Glu Lys Ser Glu Lys Leu Ile Lys Gln Met		
565	570	575
Asn Ser Val Ser Val Glu Glu Glu Ala Asp Phe Lys Gly Arg Lys		
580	585	590

<210> 79  
 <211> 1062  
 <212> DNA  
 <213> Neisseria meningitidis

<220>  
 <221> CDS  
 <222> (1)..(1062)

<400> 79

atg gaa aaa gaa ttc agg ata tta aat atc gta tcg gcc aag att tgg	48
Met Glu Lys Glu Phe Arg Ile Leu Asn Ile Val Ser Ala Lys Ile Trp	
1 5 10 15	
ggt gga ggc gaa caa tat gtc tat gat gtt tca aaa gca ttg ggg ctt	96
Gly Gly Gly Glu Gln Tyr Val Tyr Asp Val Ser Lys Ala Leu Gly Leu	
20 25 30	
cgg gac tgc aca atg ttt acc gcc gtc aat aaa aat aat gaa ttg atg	144
Arg Asp Cys Thr Met Phe Thr Ala Val Asn Lys Asn Asn Glu Leu Met	
35 40 45	
cac agg cga ttt tcc gaa gtt tct tcc gtt ttc acg aca cgc ctt cac	192
His Arg Arg Phe Ser Glu Val Ser Ser Val Phe Thr Thr Arg Leu His	
50 55 60	
acg ctc aac ggg ctg ttt tcg ctc tac gca ctt acc cgc ttt atc cgg	240
Thr Leu Asn Gly Leu Phe Ser Leu Tyr Ala Leu Thr Arg Phe Ile Arg	
65 70 75 80	
aaa aac cgc att tcc cac ctg atg ata cac acc ggc aaa att gcc gcc	288
Lys Asn Arg Ile Ser His Leu Met Ile His Thr Gly Lys Ile Ala Ala	
85 90 95	
tta tcc ata ctt ttg aaa aaa ctg acc ggg gtg cgc ctg ata ttt gtc	336

Leu Ser Ile	Leu Leu Lys Lys	Leu Thr Gly Val	Arg Leu Ile Phe Val	
	100	105	110	
aaa cat aat gtt gtc gcc aac aaa act gat ttt tat cac cgc ctg ata				384
Lys His Asn Val Val Ala Asn Lys Thr Asp Phe Tyr His Arg Leu Ile	115	120	125	
cag aaa aac acc gac cgc ttt att tgc gtt tcc cgt ctg gtt tac gat				432
Gln Lys Asn Thr Asp Arg Phe Ile Cys Val Ser Arg Leu Val Tyr Asp	130	135	140	
gtg caa acc gcc gac aat ccc ttt aaa gaa aaa tac cgg att gtt cat				480
Val Gln Thr Ala Asp Asn Pro Phe Lys Glu Lys Tyr Arg Ile Val His	145	150	155	160
aac ggt atc gat acc ggc cgt ttc cct ccc cct caa gaa aaa ccc gac				528
Asn Gly Ile Asp Thr Gly Arg Phe Pro Pro Pro Gln Glu Lys Pro Asp	165	170	175	
agc cgt ttt ttt acc gtc gcc tac gcc ggc agg atc agt ccg gaa aaa				576
Ser Arg Phe Phe Thr Val Ala Tyr Ala Gly Arg Ile Ser Pro Glu Lys	180	185	190	
gga ttg gaa aac ctg att gaa gcc tgt gtg ata ctg cat cgg aaa tat				624
Gly Leu Glu Asn Leu Ile Glu Ala Cys Val Ile Leu His Arg Lys Tyr	195	200	205	
cct caa atc agg ctc aaa ttg gca ggg gac gga cat ccg gat tat atg				672
Pro Gln Ile Arg Leu Lys Leu Ala Gly Asp Gly His Pro Asp Tyr Met	210	215	220	
tgt cgc ctg aag cgg gac gta tct gct tcg gga gca gaa cca ttt gtt				720
Cys Arg Leu Lys Arg Asp Val Ser Ala Ser Gly Ala Glu Pro Phe Val	225	230	235	240
tct ttt gaa ggg ttt acc gaa aaa ctt gct tcg ttt tac cgc caa agc				768
Ser Phe Glu Gly Phe Thr Glu Lys Leu Ala Ser Phe Tyr Arg Gln Ser	245	250	255	
gat gtc gtg gtt ttg ccc agc ctc gtc ccg gag gca ttc ggt ttg tca				816
Asp Val Val Val Leu Pro Ser Leu Val Pro Glu Ala Phe Gly Leu Ser	260	265	270	
tta tgc gag gcg atg tac tgc cga acg gcg gtg att tcc aat act ttg				864
Leu Cys Glu Ala Met Tyr Cys Arg Thr Ala Val Ile Ser Asn Thr Leu	275	280	285	
ggc gcg caa aag gaa att atc gaa cat cat caa tcg ggg att ctg ctg				912

Gly Ala Gln Lys Glu Ile Ile Glu His His Gln Ser Gly Ile Leu Leu  
 290 295 300  
  
 gat agg ctg aca cct gaa tct ttg gcg gac gaa atc gaa cgc ctc gtc 960  
 Asp Arg Leu Thr Pro Glu Ser Leu Ala Asp Glu Ile Glu Arg Leu Val  
 305 310 315 320  
  
 tta aac cct gaa acg aaa aac gca ctg gca acg gca gga cat caa tgc 1008  
 Leu Asn Pro Glu Thr Lys Asn Ala Leu Ala Thr Ala Gly His Gln Cys  
 325 330 335  
  
 gtc gcc aac cgt ttt acc atc aac cat acc gcc gac aaa tta ttg gat 1056  
 Val Ala Asn Arg Phe Thr Ile Asn His Thr Ala Asp Lys Leu Leu Asp  
 340 345 350  
  
 gca ata 1062  
 Ala Ile

<210> 80  
 <211> 354  
 <212> PRT  
 <213> Neisseria meningitidis

<400> 80  
 Met Glu Lys Glu Phe Arg Ile Leu Asn Ile Val Ser Ala Lys Ile Trp  
 1 5 10 15  
  
 Gly Gly Gly Glu Gln Tyr Val Tyr Asp Val Ser Lys Ala Leu Gly Leu  
 20 25 30  
  
 Arg Asp Cys Thr Met Phe Thr Ala Val Asn Lys Asn Asn Glu Leu Met  
 35 40 45  
  
 His Arg Arg Phe Ser Glu Val Ser Ser Val Phe Thr Thr Arg Leu His  
 50 55 60  
  
 Thr Leu Asn Gly Leu Phe Ser Leu Tyr Ala Leu Thr Arg Phe Ile Arg  
 65 70 75 80  
  
 Lys Asn Arg Ile Ser His Leu Met Ile His Thr Gly Lys Ile Ala Ala  
 85 90 95  
  
 Leu Ser Ile Leu Leu Lys Lys Leu Thr Gly Val Arg Leu Ile Phe Val  
 100 105 110  
  
 Lys His Asn Val Val Ala Asn Lys Thr Asp Phe Tyr His Arg Leu Ile  
 115 120 125



Gln Lys Asn Thr Asp Arg Phe Ile Cys Val Ser Arg Leu Val Tyr Asp  
 130 135 140

Val Gln Thr Ala Asp Asn Pro Phe Lys Glu Lys Tyr Arg Ile Val His  
 145 150 155 160

Asn Gly Ile Asp Thr Gly Arg Phe Pro Pro Gln Glu Lys Pro Asp  
 165 170 175

Ser Arg Phe Phe Thr Val Ala Tyr Ala Gly Arg Ile Ser Pro Glu Lys  
 180 185 190

Gly Leu Glu Asn Leu Ile Glu Ala Cys Val Ile Leu His Arg Lys Tyr  
 195 200 205

Pro Gln Ile Arg Leu Lys Leu Ala Gly Asp Gly His Pro Asp Tyr Met  
 210 215 220

Cys Arg Leu Lys Arg Asp Val Ser Ala Ser Gly Ala Glu Pro Phe Val  
 225 230 235 240

Ser Phe Glu Gly Phe Thr Glu Lys Leu Ala Ser Phe Tyr Arg Gln Ser  
 245 250 255

Asp Val Val Val Leu Pro Ser Leu Val Pro Glu Ala Phe Gly Leu Ser  
 260 265 270

Leu Cys Glu Ala Met Tyr Cys Arg Thr Ala Val Ile Ser Asn Thr Leu  
 275 280 285

Gly Ala Gln Lys Glu Ile Ile Glu His His Gln Ser Gly Ile Leu Leu  
 290 295 300

Asp Arg Leu Thr Pro Glu Ser Leu Ala Asp Glu Ile Glu Arg Leu Val  
 305 310 315 320

Leu Asn Pro Glu Thr Lys Asn Ala Leu Ala Thr Ala Gly His Gln Cys  
 325 330 335

Val Ala Asn Arg Phe Thr Ile Asn His Thr Ala Asp Lys Leu Leu Asp  
 340 345 350

Ala Ile

<210> 81  
 <211> 795  
 <212> DNA  
 <213> *Neisseria meningitidis*

<220>  
 <221> CDS  
 <222> (1)..(795)

<400> 81  
 atg gcg gct gtt ttt tct gta tgt gcc tgt ttt atg tgt tcc tgc ctt 48  
 Met Ala Ala Val Phe Ser Val Cys Ala Cys Phe Met Cys Ser Cys Leu  
     1                    5                    10                    15

gtt gtc aaa aat acc gtt atc gga agc gga cgc acc aaa atc gcc gtg 96  
 Val Val Lys Asn Thr Val Ile Gly Ser Gly Arg Thr Lys Ile Ala Val  
                     20                    25                    30

ccg ctt gtc gcc cgc gat gcc gcc gta ctt tcc gcc gta ctt gac caa 144  
 Pro Leu Val Ala Arg Asp Ala Ala Val Leu Ser Ala Val Leu Asp Gln  
             35                    40                    45

atc aaa aac ctg ccc ttc gat atc gtc gag ttc cgc gcc gat ttt ttg 192  
 Ile Lys Asn Leu Pro Phe Asp Ile Val Glu Phe Arg Ala Asp Phe Leu  
             50                    55                    60

gaa tgc gcg ggc agc atc ggc gaa gta ttg cgc cac acg cag acc gtc 240  
 Glu Cys Ala Gly Ser Ile Gly Glu Val Leu Arg His Thr Gln Thr Val  
     65                    70                    75                    80

cgc gac gcg cta ccc gac aag ccg ctg ctg ttt acg ttc aga cgg cat 288  
 Arg Asp Ala Leu Pro Asp Lys Pro Leu Leu Phe Thr Phe Arg Arg His  
                     85                    90                    95

ggc gaa ggc ggc tcg ttc ccg tgt tcg gac gat tat tat ttt gaa ctg 336  
 Gly Glu Gly Gly Ser Phe Pro Cys Ser Asp Asp Tyr Tyr Phe Glu Leu  
                     100                    105                    110

ctc gac gcg ctg atc gaa agc cgc ctg ccc gac atc atc gac atc gag 384  
 Leu Asp Ala Leu Ile Glu Ser Arg Leu Pro Asp Ile Ile Asp Ile Glu  
             115                    120                    125

ctg ttt tcc ggc gaa acc gcc gtc cgg tgc gcc gtg gca aat gct caa 432  
 Leu Phe Ser Gly Glu Thr Ala Val Arg Cys Ala Val Ala Asn Ala Gln  
             130                    135                    140

aaa aac ggc atc gcc gcc ctg ctc tgc aat cat gag ttt cac cgc acg 480  
 Lys Asn Gly Ile Ala Ala Leu Leu Cys Asn His Glu Phe His Arg Thr

145	150	155	160	
ccg ccg caa gaa gaa atc gta tgc cgt ctg aaa cag atg gag gac tgc	528			
Pro Pro Gln Glu Glu Ile Val Cys Arg Leu Lys Gln Met Glu Asp Cys				
165	170	175		
ggc gcg gac atc tgc aaa att gcg gtg atg ccg caa agc gcg gaa gat	576			
Gly Ala Asp Ile Cys Lys Ile Ala Val Met Pro Gln Ser Ala Glu Asp				
180	185	190		
gtg ctg act ttg ctt tcc gcc acg ctc aaa gcg aaa gag ctt gcc gcc	624			
Val Leu Thr Leu Leu Ser Ala Thr Leu Lys Ala Lys Glu Leu Ala Ala				
195	200	205		
aaa ccg att gtt acg atg tcg atg ggg cag acg ggg gcg gtc agc cgg	672			
Lys Pro Ile Val Thr Met Ser Met Gly Gln Thr Gly Ala Val Ser Arg				
210	215	220		
ctt gcc gga cag gtg ttc ggc tca agc atc acg ttc ggt tcg gga acg	720			
Leu Ala Gly Gln Val Phe Gly Ser Ser Ile Thr Phe Gly Ser Gly Thr				
225	230	235	240	
caa aac tcc gcg ccg ggg caa atc ggc gta tcc gcc ctc cgt gcg aca	768			
Gln Asn Ser Ala Pro Gly Gln Ile Gly Val Ser Ala Leu Arg Ala Thr				
245	250	255		
ctc gac tgc ctc gaa aac gga gca gac	795			
Leu Asp Cys Leu Glu Asn Gly Ala Asp				
260	265			

&lt;210&gt; 82

&lt;211&gt; 265

&lt;212&gt; PRT

&lt;213&gt; Neisseria meningitidis

&lt;400&gt; 82

Met Ala Ala Val Phe Ser Val Cys Ala Cys Phe Met Cys Ser Cys Leu
1 5 10 15

Val Val Lys Asn Thr Val Ile Gly Ser Gly Arg Thr Lys Ile Ala Val
20 25 30

Pro Leu Val Ala Arg Asp Ala Ala Val Leu Ser Ala Val Leu Asp Gln
35 40 45

Ile Lys Asn Leu Pro Phe Asp Ile Val Glu Phe Arg Ala Asp Phe Leu
50 55 60

Glu Cys Ala Gly Ser Ile Gly Glu Val Leu Arg His Thr Gln Thr Val  
 65 70 75 80  
 Arg Asp Ala Leu Pro Asp Lys Pro Leu Leu Phe Thr Phe Arg Arg His  
 85 90 95  
 Gly Glu Gly Gly Ser Phe Pro Cys Ser Asp Asp Tyr Tyr Phe Glu Leu  
 100 105 110  
 Leu Asp Ala Leu Ile Glu Ser Arg Leu Pro Asp Ile Ile Asp Ile Glu  
 115 120 125  
 Leu Phe Ser Gly Glu Thr Ala Val Arg Cys Ala Val Ala Asn Ala Gln  
 130 135 140  
 Lys Asn Gly Ile Ala Ala Leu Leu Cys Asn His Glu Phe His Arg Thr  
 145 150 155 160  
 Pro Pro Gln Glu Glu Ile Val Cys Arg Leu Lys Gln Met Glu Asp Cys  
 165 170 175  
 Gly Ala Asp Ile Cys Lys Ile Ala Val Met Pro Gln Ser Ala Glu Asp  
 180 185 190  
 Val Leu Thr Leu Leu Ser Ala Thr Leu Lys Ala Lys Glu Leu Ala Ala  
 195 200 205  
 Lys Pro Ile Val Thr Met Ser Met Gly Gln Thr Gly Ala Val Ser Arg  
 210 215 220  
 Leu Ala Gly Gln Val Phe Gly Ser Ser Ile Thr Phe Gly Ser Gly Thr  
 225 230 235 240  
 Gln Asn Ser Ala Pro Gly Gln Ile Gly Val Ser Ala Leu Arg Ala Thr  
 245 250 255  
 Leu Asp Cys Leu Glu Asn Gly Ala Asp  
 260 265

&lt;210&gt; 83

&lt;211&gt; 876

&lt;212&gt; DNA

&lt;213&gt; Neisseria meningitidis

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(876)

&lt;400&gt; 83

ttg acc gtc cga acg aaa aag acg gcg cat tat acc cta ttc cat tcc	48
Leu Thr Val Arg Thr Lys Lys Thr Ala His Tyr Thr Leu Phe His Ser	
1 5 10 15	
 gac cga aaa ccg aac atg act act ctc aaa ccc gcc ctg ccc gct tat	96
Asp Arg Lys Pro Asn Met Thr Thr Leu Lys Pro Ala Leu Pro Ala Tyr	
20 25 30	
 ctg gac aac atc cgc atc atc ctc acg cgc acc agc cat ccc gcc aac	144
Leu Asp Asn Ile Arg Ile Ile Leu Thr Arg Thr Ser His Pro Ala Asn	
35 40 45	
 atc ggc tct gcc gcg cgc gcg atg aaa aca atg ggt ctg cac aaa ctg	192
Ile Gly Ser Ala Ala Arg Ala Met Lys Thr Met Gly Leu His Lys Leu	
50 55 60	
 acc atc gtc gcc cca aat ctg atg gca acg ccg atg acg gaa aac ccg	240
Thr Ile Val Ala Pro Asn Leu Met Ala Thr Pro Met Thr Glu Asn Pro	
65 70 75 80	
 ccc gtg ttt gac ccg gag cat cct caa tcg ttt aaa tta ccg gaa gaa	288
Pro Val Phe Asp Pro Glu His Pro Gln Ser Phe Lys Leu Pro Glu Glu	
85 90 95	
 agc ttc atc ctc gct tcc ggc gcg gca gac gtt ttg gaa aat gcc acc	336
Ser Phe Ile Leu Ala Ser Gly Ala Ala Asp Val Leu Glu Asn Ala Thr	
100 105 110	
 att gcc gct tct ttg gac gaa gcc ctt gcc gac acc acc atc gcc tgc	384
Ile Ala Ala Ser Leu Asp Glu Ala Leu Ala Asp Thr Thr Ile Ala Cys	
115 120 125	
 gcc ctg acc agc cgc cgc cgc gaa att act gcg ccg ctg caa acc ccg	432
Ala Leu Thr Ser Arg Arg Arg Glu Ile Thr Ala Pro Leu Gln Thr Pro	
130 135 140	
 cgc gat ttg gta tcc gaa tta ctg cag acc gca aac cga ggc gag aaa	480
Arg Asp Leu Val Ser Glu Leu Leu Gln Thr Ala Asn Arg Gly Glu Lys	
145 150 155 160	
 gtg gca ctg gtt ttc ggc aac gag act ttc ggc ttg agc atc gaa gaa	528
Val Ala Leu Val Phe Gly Asn Glu Thr Phe Gly Leu Ser Ile Glu Glu	
165 170 175	

gtc caa gcc tgc aac cga ctg atg acc atc aac ggc aat ccc gac tat 576  
 Val Gln Ala Cys Asn Arg Leu Met Thr Ile Asn Gly Asn Pro Asp Tyr  
                   180                                  185                                  190

ttc tcg ctc aac ctc gcc caa gcc gtg cag gtc gtg tgc tac gaa atc 624  
 Phe Ser Leu Asn Leu Ala Gln Ala Val Gln Val Val Cys Tyr Glu Ile  
                   195                                  200                                  205

ttc agc caa acc ggt tcg ccc atg acc cat ctt caa caa gaa gac cac 672  
 Phe Ser Gln Thr Gly Ser Pro Met Thr His Leu Gln Gln Glu Asp His  
                   210                                  215                                  220

gct gcg acc cac gag caa atc aaa ggc atg gtc gcc cac atg gaa agc 720  
 Ala Ala Thr His Glu Gln Ile Lys Gly Met Val Ala His Met Glu Ser  
 225                                  230                                  235                                  240

gtg atg aac gac atc ggc ttt ttc aac cgc cgc aac ggc gag cgt ctg 768  
 Val Met Asn Asp Ile Gly Phe Phe Asn Arg Arg Asn Gly Glu Arg Ile  
                                   245                                  250                                  255

atg cgc cgt atg cag agc ctg ttc gga cgc gcc aac acg caa acc gaa 816  
 Met Arg Arg Met Gln Ser Leu Phe Gly Arg Ala Asn Thr Gln Thr Glu  
                                   260                                  265                                  270

gac atc gat atc ctg cgc ggt ttt ttc aat acc gtc agc cat cgt atc 864  
 Asp Ile Asp Ile Leu Arg Gly Phe Phe Asn Thr Val Ser His Arg Ile  
                   275                                  280                                  285

cat aaa aaa gac 876  
 His Lys Lys Asp  
                   290

<210> 84

<211> 292

<212> PRT

<213> Neisseria meningitidis

<400> 84

Leu Thr Val Arg Thr Lys Lys Thr Ala His Tyr Thr Leu Phe His Ser  
           1                                  5                                  10                                  15

Asp Arg Lys Pro Asn Met Thr Thr Leu Lys Pro Ala Leu Pro Ala Tyr  
                   20                                  25                                  30

Leu Asp Asn Ile Arg Ile Ile Leu Thr Arg Thr Ser His Pro Ala Asn  
                   35                                  40                                  45

Ile Gly Ser Ala Ala Arg Ala Met Lys Thr Met Gly Leu His Lys Leu  
 50 55 60

Thr Ile Val Ala Pro Asn Leu Met Ala Thr Pro Met Thr Glu Asn Pro  
 65 70 75 80

Pro Val Phe Asp Pro Glu His Pro Gln Ser Phe Lys Leu Pro Glu Glu  
 85 90 95

Ser Phe Ile Leu Ala Ser Gly Ala Ala Asp Val Leu Glu Asn Ala Thr  
 100 105 110

Ile Ala Ala Ser Leu Asp Glu Ala Leu Ala Asp Thr Thr Ile Ala Cys  
 115 120 125

Ala Leu Thr Ser Arg Arg Arg Glu Ile Thr Ala Pro Leu Gln Thr Pro  
 130 135 140

Arg Asp Leu Val Ser Glu Leu Leu Gln Thr Ala Asn Arg Gly Glu Lys  
 145 150 155 160

Val Ala Leu Val Phe Gly Asn Glu Thr Phe Gly Leu Ser Ile Glu Glu  
 165 170 175

Val Gln Ala Cys Asn Arg Leu Met Thr Ile Asn Gly Asn Pro Asp Tyr  
 180 185 190

Phe Ser Leu Asn Leu Ala Gln Ala Val Gln Val Val Cys Tyr Glu Ile  
 195 200 205

Phe Ser Gln Thr Gly Ser Pro Met Thr His Leu Gln Gln Glu Asp His  
 210 215 220

Ala Ala Thr His Glu Gln Ile Lys Gly Met Val Ala His Met Glu Ser  
 225 230 235 240

Val Met Asn Asp Ile Gly Phe Phe Asn Arg Arg Asn Gly Glu Arg Leu  
 245 250 255

Met Arg Arg Met Gln Ser Leu Phe Gly Arg Ala Asn Thr Gln Thr Glu  
 260 265 270

Asp Ile Asp Ile Leu Arg Gly Phe Phe Asn Thr Val Ser His Arg Ile  
 275 280 285

His Lys Lys Asp  
 290

&lt;210&gt; 85

&lt;211&gt; 1545

&lt;212&gt; DNA

&lt;213&gt; Neisseria meningitidis

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(1545)

&lt;400&gt; 85

```

gtg cgt ctc aat cat ttc ata atg ata gcg att att ata tat gtg att      48
Val Arg Leu Asn His Phe Ile Met Ile Ala Ile Ile Ile Tyr Val Ile
   1             5             10             15

tcc cct gca aac aag ccg gcc cgc cgc cac agc gtt ccc act tat ccg      96
Ser Pro Ala Asn Lys Pro Ala Arg Arg His Ser Val Pro Thr Tyr Pro
           20             25             30

gct ttg cct tat aat tgc ttt ttt tat gta aca gat tta cct atg aat     144
Ala Leu Pro Tyr Asn Cys Phe Phe Tyr Val Thr Asp Leu Pro Met Asn
       35             40             45

ttc ccc aaa aca gcg gcc tcc ctg ctg ctg ctt ctc gcc tcc ctc gcc     192
Phe Pro Lys Thr Ala Ala Ser Leu Leu Leu Leu Leu Ala Ser Leu Ala
       50             55             60

gca cac gcg ctc gat aca ggt cgc att ccg caa aac gaa atc gcc gta     240
Ala His Ala Leu Asp Thr Gly Arg Ile Pro Gln Asn Glu Ile Ala Val
       65             70             75             80

tat gtc caa gag ctt gac agc gga aaa gtc atc att gac cac cgc tcg     288
Tyr Val Gln Glu Leu Asp Ser Gly Lys Val Ile Ile Asp His Arg Ser
           85             90             95

gat gtc ccc gtc aac ccc gcc tcc aca atg aaa ctc gtt acc gcg ttt     336
Asp Val Pro Val Asn Pro Ala Ser Thr Met Lys Leu Val Thr Ala Phe
       100             105             110

gcc gcc ttc aaa acc ttc ggc agc aat tac cgc tgg gcg acc gag ttt     384
Ala Ala Phe Lys Thr Phe Gly Ser Asn Tyr Arg Trp Ala Thr Glu Phe
       115             120             125

aaa agc aac ggt acg gta aac gac ggc acg ctt gac gga aac ctg tat     432
Lys Ser Asn Gly Thr Val Asn Asp Gly Thr Leu Asp Gly Asn Leu Tyr
       130             135             140

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tgg gcg ggc agc ggc gac ccc gtt ttc aat cag gaa aac ctg ctt gcc	480
Trp Ala Gly Ser Gly Asp Pro Val Phe Asn Gln Glu Asn Leu Leu Ala	
145 150 155 160	
gtc caa cgc cag ttg cgc gaa caa ggc ata cgc aat atc acg gga cac	528
Val Gln Arg Gln Leu Arg Glu Gln Gly Ile Arg Asn Ile Thr Gly His	
165 170 175	
ctg atg ctc gac cac agc ctg tgg ggc gaa gtc ggc agc ccc gac gat	576
Leu Met Leu Asp His Ser Leu Trp Gly Glu Val Gly Ser Pro Asp Asp	
180 185 190	
ttc gaa gcc gac agc ggt tcg ccg ttt atg acg ccc ccc aat cca act	624
Phe Glu Ala Asp Ser Gly Ser Pro Phe Met Thr Pro Pro Asn Pro Thr	
195 200 205	
atg ctg tct gcc ggt atg gtt atg gtg cgc gcc gaa cgc aat gcc gcc	672
Met Leu Ser Ala Gly Met Val Met Val Arg Ala Glu Arg Asn Ala Ala	
210 215 220	
gac agt acc gac atc ctc acc gat ccg cct ttg ccg cat att ttc gcc	720
Asp Ser Thr Asp Ile Leu Thr Asp Pro Pro Leu Pro His Ile Phe Ala	
225 230 235 240	
caa aac aac ttg aaa att acc gcc tcc caa gct gcc tgc cct tcg atc	768
Gln Asn Asn Leu Lys Ile Thr Ala Ser Gln Ala Ala Cys Pro Ser Ile	
245 250 255	
aaa aaa ctg atg cgt gca tct ttt tcg gac aat acg ctg aaa ttg cgc	816
Lys Lys Leu Met Arg Ala Ser Phe Ser Asp Asn Thr Leu Lys Leu Arg	
260 265 270	
ggc aat att ccc gag agc tgt ttg ggc aag cct gtc ggt gtc cgg atg	864
Gly Asn Ile Pro Glu Ser Cys Leu Gly Lys Pro Val Gly Val Arg Met	
275 280 285	
ttc gcg ctt gac gaa ctg atc cgg caa agt ttt acc aac cac tgg ctg	912
Phe Ala Leu Asp Glu Leu Ile Arg Gln Ser Phe Thr Asn His Trp Leu	
290 295 300	
ctc ggc ggc gga cgg att tca gac ggc atc ggc ata tcc gac acg ccg	960
Leu Gly Gly Gly Arg Ile Ser Asp Gly Ile Gly Ile Ser Asp Thr Pro	
305 310 315 320	
gaa ggc gcg cag acg ctt gcc gtt gca cac tca aag ccg atg aag gaa	1008
Glu Gly Ala Gln Thr Leu Ala Val Ala His Ser Lys Pro Met Lys Glu	
325 330 335	

att ttg acg gac atg aac aag cgt tcg gac aat cta att gcg cgt tcc	1056
Ile Leu Thr Asp Met Asn Lys Arg Ser Asp Asn Leu Ile Ala Arg Ser	
340 345 350	
gtc ttc ctc aaa ctc ggc ggc gac ggc aaa ctg ccc gcc gtt tcc gaa	1104
Val Phe Leu Lys Leu Gly Gly Asp Gly Lys Leu Pro Ala Val Ser Glu	
355 360 365	
cag gca gcg tct gcc gtc cgg cgt gaa ctt gcc gtg tcg ggc atc gat	1152
Gln Ala Ala Ser Ala Val Arg Arg Glu Leu Ala Val Ser Gly Ile Asp	
370 375 380	
gtt gcg gat ttg gtt ttg gaa aac ggt tca ggt ctg tcc aga aaa gaa	1200
Val Ala Asp Leu Val Leu Glu Asn Gly Ser Gly Leu Ser Arg Lys Glu	
385 390 395 400	
agg gta acg gcg aga atg atg gcg caa atg ttg gaa acg gct tat ttc	1248
Arg Val Thr Ala Arg Met Met Ala Gln Met Leu Glu Thr Ala Tyr Phe	
405 410 415	
agc ccg ttt gca caa gat ttc atc gat acg ctg ccc atc gcc ggc aca	1296
Ser Pro Phe Ala Gln Asp Phe Ile Asp Thr Leu Pro Ile Ala Gly Thr	
420 425 430	
gac ggg act tta cgc aac cgc ttc aaa caa agc ggc ggg ctg ttg cgc	1344
Asp Gly Thr Leu Arg Asn Arg Phe Lys Gln Ser Gly Gly Leu Leu Arg	
435 440 445	
tta aaa acc ggc acg ctc aac aat gtc cgc gcc ctt gca ggt tat tgg	1392
Leu Lys Thr Gly Thr Leu Asn Asn Val Arg Ala Leu Ala Gly Tyr Trp	
450 455 460	
ctg ggc gac aaa ccg atg gcg gtg gtc gtc atc atc aac agc ggc cgc	1440
Leu Gly Asp Lys Pro Met Ala Val Val Val Ile Ile Asn Ser Gly Arg	
465 470 475 480	
gcc gtt tcc ctg ctg ccc gac ttg gac aac ttc gtt gcc aac aac atc	1488
Ala Val Ser Leu Leu Pro Asp Leu Asp Asn Phe Val Ala Asn Asn Ile	
485 490 495	
atc tcc ggc ggc gat ggc tgg ctg gat gcg aaa ctg atg tgc aaa gaa	1536
Ile Ser Gly Gly Asp Gly Trp Leu Asp Ala Lys Leu Met Cys Lys Glu	
500 505 510	
cgc cga gcc	1545
Arg Arg Ala	
515	

&lt;210&gt; 86

&lt;211&gt; 515

&lt;212&gt; PRT

&lt;213&gt; Neisseria meningitidis

&lt;400&gt; 86

Val Arg Leu Asn His Phe Ile Met Ile Ala Ile Ile Ile Tyr Val Ile  
 1 5 10 15

Ser Pro Ala Asn Lys Pro Ala Arg Arg His Ser Val Pro Thr Tyr Pro  
 20 25 30

Ala Leu Pro Tyr Asn Cys Phe Phe Tyr Val Thr Asp Leu Pro Met Asn  
 35 40 45

Phe Pro Lys Thr Ala Ala Ser Leu Leu Leu Leu Leu Ala Ser Leu Ala  
 50 55 60

Ala His Ala Leu Asp Thr Gly Arg Ile Pro Gln Asn Glu Ile Ala Val  
 65 70 75 80

Tyr Val Gln Glu Leu Asp Ser Gly Lys Val Ile Ile Asp His Arg Ser  
 85 90 95

Asp Val Pro Val Asn Pro Ala Ser Thr Met Lys Leu Val Thr Ala Phe  
 100 105 110

Ala Ala Phe Lys Thr Phe Gly Ser Asn Tyr Arg Trp Ala Thr Glu Phe  
 115 120 125

Lys Ser Asn Gly Thr Val Asn Asp Gly Thr Leu Asp Gly Asn Leu Tyr  
 130 135 140

Trp Ala Gly Ser Gly Asp Pro Val Phe Asn Gln Glu Asn Leu Leu Ala  
 145 150 155 160

Val Gln Arg Gln Leu Arg Glu Gln Gly Ile Arg Asn Ile Thr Gly His  
 165 170 175

Leu Met Leu Asp His Ser Leu Trp Gly Glu Val Gly Ser Pro Asp Asp  
 180 185 190

Phe Glu Ala Asp Ser Gly Ser Pro Phe Met Thr Pro Pro Asn Pro Thr  
 195 200 205

Met Leu Ser Ala Gly Met Val Met Val Arg Ala Glu Arg Asn Ala Ala  
 210 215 220

Asp	Ser	Thr	Asp	Ile	Leu	Thr	Asp	Pro	Pro	Leu	Pro	His	Ile	Phe	Ala	225	230	235	240
Gln	Asn	Asn	Leu	Lys	Ile	Thr	Ala	Ser	Gln	Ala	Ala	Cys	Pro	Ser	Ile	245	250	255	
Lys	Lys	Leu	Met	Arg	Ala	Ser	Phe	Ser	Asp	Asn	Thr	Leu	Lys	Leu	Arg	260	265	270	
Gly	Asn	Ile	Pro	Glu	Ser	Cys	Leu	Gly	Lys	Pro	Val	Gly	Val	Arg	Met	275	280	285	
Phe	Ala	Leu	Asp	Glu	Leu	Ile	Arg	Gln	Ser	Phe	Thr	Asn	His	Trp	Leu	290	295	300	
Leu	Gly	Gly	Gly	Arg	Ile	Ser	Asp	Gly	Ile	Gly	Ile	Ser	Asp	Thr	Pro	305	310	315	320
Glu	Gly	Ala	Gln	Thr	Leu	Ala	Val	Ala	His	Ser	Lys	Pro	Met	Lys	Glu	325	330	335	
Ile	Leu	Thr	Asp	Met	Asn	Lys	Arg	Ser	Asp	Asn	Leu	Ile	Ala	Arg	Ser	340	345	350	
Val	Phe	Leu	Lys	Leu	Gly	Gly	Asp	Gly	Lys	Leu	Pro	Ala	Val	Ser	Glu	355	360	365	
Gln	Ala	Ala	Ser	Ala	Val	Arg	Arg	Glu	Leu	Ala	Val	Ser	Gly	Ile	Asp	370	375	380	
Val	Ala	Asp	Leu	Val	Leu	Glu	Asn	Gly	Ser	Gly	Leu	Ser	Arg	Lys	Glu	385	390	395	400
Arg	Val	Thr	Ala	Arg	Met	Met	Ala	Gln	Met	Leu	Glu	Thr	Ala	Tyr	Phe	405	410	415	
Ser	Pro	Phe	Ala	Gln	Asp	Phe	Ile	Asp	Thr	Leu	Pro	Ile	Ala	Gly	Thr	420	425	430	
Asp	Gly	Thr	Leu	Arg	Asn	Arg	Phe	Lys	Gln	Ser	Gly	Gly	Leu	Leu	Arg	435	440	445	
Leu	Lys	Thr	Gly	Thr	Leu	Asn	Asn	Val	Arg	Ala	Leu	Ala	Gly	Tyr	Trp	450	455	460	
Leu	Gly	Asp	Lys	Pro	Met	Ala	Val	Val	Val	Ile	Ile	Asn	Ser	Gly	Arg	465	470	475	480

Ala Val Ser Leu Leu Pro Asp Leu Asp Asn Phe Val Ala Asn Asn Ile  
 485 490 495

Ile Ser Gly Gly Asp Gly Trp Leu Asp Ala Lys Leu Met Cys Lys Glu  
 500 505 510

Arg Arg Ala  
 515

<210> 87

<211> 840

<212> DNA

<213> Neisseria meningitidis

<220>

<221> CDS

<222> (1)..(840)

<400> 87

atg gat aaa gaa cga att tta acc ccc gca gtc gtg ttt tcc gtc gca 48  
 Met Asp Lys Glu Arg Ile Leu Thr Pro Ala Val Val Phe Ser Val Ala  
 1 5 10 15

ctg ctg cat ttg gca atg gtg gca ttg ctc tgg cag gcg cac aag ctg 96  
 Leu Leu His Leu Ala Met Val Ala Leu Leu Trp Gln Ala His Lys Leu  
 20 25 30

ccc gtg ata gag tca ggc aat gtt att gaa ttt gtc gat ttg ggc gat 144  
 Pro Val Ile Glu Ser Gly Asn Val Ile Glu Phe Val Asp Leu Gly Asp  
 35 40 45

ttt ggc gga ggg gac ggc gca ccc gaa ggt gca ggc gcg cct gcc gcg 192  
 Phe Gly Gly Gly Asp Gly Ala Pro Glu Gly Ala Gly Ala Pro Ala Ala  
 50 55 60

ccc gaa ccg caa ccc gtg ccc gag ccg ccc aaa cct gtc gag ccg ccc 240  
 Pro Glu Pro Gln Pro Val Pro Glu Pro Pro Lys Pro Val Glu Pro Pro  
 65 70 75 80

aag ccg gtt ttg aag ccg gtg gtt acg aaa aag gcg gat gcg gat att 288  
 Lys Pro Val Leu Lys Pro Val Val Thr Lys Lys Ala Asp Ala Asp Ile  
 85 90 95

cag cag cct aag gaa gag ccg aaa cct gaa gaa aag ccg aaa ccc gaa 336  
 Gln Gln Pro Lys Glu Glu Pro Lys Pro Glu Glu Lys Pro Lys Pro Glu

100	105	110	
gaa aaa ccg aaa cca gag cct aag ccg gaa gcg aag cct gtc ccg aaa			384
Glu Lys Pro Lys Pro Glu Pro Lys Pro Glu Ala Lys Pro Val Pro Lys			
115	120	125	
ccg gcg gaa aaa ccg gtc gag aag ccg tct gaa aaa cct gcc gaa cat			432
Pro Ala Glu Lys Pro Val Glu Lys Pro Ser Glu Lys Pro Ala Glu His			
130	135	140	
ccc ggc aat gct tct gcc aaa gca gac agc gag cag ggc aat ggg gaa			480
Pro Gly Asn Ala Ser Ala Lys Ala Asp Ser Glu Gln Gly Asn Gly Glu			
145	150	155	160
gat aag gga acc ggt atc aaa gga gac gga acg ggg cgc gga gaa ggc			528
Asp Lys Gly Thr Gly Ile Lys Gly Asp Gly Thr Gly Arg Gly Glu Gly			
165	170	175	
agc ggt aaa ggt agc ggc ggt gtc aaa ggc gaa cac ggg gaa gga gcc			576
Ser Gly Lys Gly Ser Gly Gly Val Lys Gly Glu His Gly Glu Gly Ala			
180	185	190	
ggc agc agc aaa ggc aat cct tta cgc gcc aac ggc agc att ccg cgc			624
Gly Ser Ser Lys Gly Asn Pro Leu Arg Ala Asn Gly Ser Ile Pro Arg			
195	200	205	
ccg gct tat ccc acg ctt tct atg gag aat gat gag cag ggt acg gtt			672
Pro Ala Tyr Pro Thr Leu Ser Met Glu Asn Asp Glu Gln Gly Thr Val			
210	215	220	
gtt ttg agc gtt ttg gtt tct ccg ggc ggt cat gtt gag tcc gtt aaa			720
Val Leu Ser Val Leu Val Ser Pro Gly Gly His Val Glu Ser Val Lys			
225	230	235	240
atc gtg aaa agc agt ggt ttt tcc cgg ttg gac aat gcg gca cgc aag			768
Ile Val Lys Ser Ser Gly Phe Ser Arg Leu Asp Asn Ala Ala Arg Lys			
245	250	255	
gcg gcg caa aac ggg cat ttt caa gcc aat gcc tgg acg gag ttt aaa			816
Ala Ala Gln Asn Gly His Phe Gln Ala Asn Ala Trp Thr Glu Phe Lys			
260	265	270	
gtc ccc gtc aag ttt gaa ttg aat			840
Val Pro Val Lys Phe Glu Leu Asn			
275	280		

&lt;210&gt; 88

&lt;211&gt; 280

&lt;212&gt; PRT

&lt;213&gt; Neisseria meningitidis

&lt;400&gt; 88

Met Asp Lys Glu Arg Ile Leu Thr Pro Ala Val Val Phe Ser Val Ala

1

5

10

15

Leu Leu His Leu Ala Met Val Ala Leu Leu Trp Gln Ala His Lys Leu

20

25

30

Pro Val Ile Glu Ser Gly Asn Val Ile Glu Phe Val Asp Leu Gly Asp

35

40

45

Phe Gly Gly Gly Asp Gly Ala Pro Glu Gly Ala Gly Ala Pro Ala Ala

50

55

60

Pro Glu Pro Gln Pro Val Pro Glu Pro Pro Lys Pro Val Glu Pro Pro

65

70

75

80

Lys Pro Val Leu Lys Pro Val Val Thr Lys Lys Ala Asp Ala Asp Ile

85

90

95

Gln Gln Pro Lys Glu Glu Pro Lys Pro Glu Glu Lys Pro Lys Pro Glu

100

105

110

Glu Lys Pro Lys Pro Glu Pro Lys Pro Glu Ala Lys Pro Val Pro Lys

115

120

125

Pro Ala Glu Lys Pro Val Glu Lys Pro Ser Glu Lys Pro Ala Glu His

130

135

140

Pro Gly Asn Ala Ser Ala Lys Ala Asp Ser Glu Gln Gly Asn Gly Glu

145

150

155

160

Asp Lys Gly Thr Gly Ile Lys Gly Asp Gly Thr Gly Arg Gly Glu Gly

165

170

175

Ser Gly Lys Gly Ser Gly Gly Val Lys Gly Glu His Gly Glu Gly Ala

180

185

190

Gly Ser Ser Lys Gly Asn Pro Leu Arg Ala Asn Gly Ser Ile Pro Arg

195

200

205

Pro Ala Tyr Pro Thr Leu Ser Met Glu Asn Asp Glu Gln Gly Thr Val

210

215

220

Val Leu Ser Val Leu Val Ser Pro Gly Gly His Val Glu Ser Val Lys

225	230	235	240
Ile Val Lys Ser Ser Gly Phe Ser Arg Leu Asp Asn Ala Ala Arg Lys			
	245	250	255
Ala Ala Gln Asn Gly His Phe Gln Ala Asn Ala Trp Thr Glu Phe Lys			
	260	265	270
Val Pro Val Lys Phe Glu Leu Asn			
	275	280	

<210> 89  
 <211> 1584  
 <212> DNA  
 <213> Neisseria meningitidis

<220>  
 <221> CDS  
 <222> (1)..(1584)

<400> 89  
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 Met Ala Leu Phe Leu Ser Ile Phe Pro Ile Val Leu Leu Ile Trp Leu  
 1 5 10 15

atg gtg aaa aaa aac agt atg ccc tcc tac gtc gcg ctg ccg att acc 96  
 Met Val Lys Lys Asn Ser Met Pro Ser Tyr Val Ala Leu Pro Ile Thr  
 20 25 30

gca gtg ctg att tac gcc atc aaa ctt ttc tac ttc gac gat gcg ggc 144  
 Ala Val Leu Ile Tyr Ala Ile Lys Leu Phe Tyr Phe Asp Asp Ala Gly  
 35 40 45

atg ctg ctc aac gcc acc gcc gct tcc ggc ctc gtc aaa acg ctc acg 192  
 Met Leu Leu Asn Ala Thr Ala Ala Ser Gly Leu Val Lys Thr Leu Thr  
 50 55 60

ccg att acc gtg att ttc ggc gcg att atg ttc aac cgt atg atg gaa 240  
 Pro Ile Thr Val Ile Phe Gly Ala Ile Met Phe Asn Arg Met Met Glu  
 65 70 75 80

acc acg ggc tgc atc gat gtc atc cgc aaa tgg ctg gcg acc atc agc 288  
 Thr Thr Gly Cys Ile Asp Val Ile Arg Lys Trp Leu Ala Thr Ile Ser  
 85 90 95

ccc aac ccc gta gcg caa ctg atg att atc ggc tgg gct ttt gcc ttt 336



Pro	Asn	Pro	Val	Ala	Gln	Leu	Met	Ile	Ile	Gly	Trp	Ala	Phe	Ala	Phe		
			100					105					110				
atg	att	gaa	ggc	gca	tcc	ggc	ttc	ggc	acg	cct	gcc	gcg	att	gcc	gcg	384	
Met	Ile	Glu	Gly	Ala	Ser	Gly	Phe	Gly	Thr	Pro	Ala	Ala	Ile	Ala	Ala		
		115					120					125					
ccg	att	ctg	atg	agc	ttg	ggc	ttc	aac	ccg	ttg	aaa	gtg	gcg	att	ttc	432	
Pro	Ile	Leu	Met	Ser	Leu	Gly	Phe	Asn	Pro	Leu	Lys	Val	Ala	Ile	Phe		
		130				135					140						
act	ttg	gtg	atg	aac	tcc	gtc	ccc	gtc	tct	ttc	ggc	gcg	gtc	ggc	acg	480	
Thr	Leu	Val	Met	Asn	Ser	Val	Pro	Val	Ser	Phe	Gly	Ala	Val	Gly	Thr		
145					150					155				160			
ccg	acc	tgg	ttc	ggc	ttc	gca	ccg	ctg	aac	ctg	agt	gcc	gaa	gac	atc	528	
Pro	Thr	Trp	Phe	Gly	Phe	Ala	Pro	Ile	Asn	Leu	Ser	Ala	Glu	Asp	Ile		
			165					170					175				
ctc	gcc	atc	ggc	agg	cag	acc	ggc	gta	atg	cac	ttc	ttc	gca	ggc	ttc	576	
Leu	Ala	Ile	Gly	Arg	Gln	Thr	Gly	Val	Met	His	Phe	Phe	Ala	Gly	Phe		
		180					185						190				
gtc	atc	ccc	gtc	atc	ggc	ttg	ggc	ttc	atc	gta	cct	tgg	tct	gaa	atc	624	
Val	Ile	Pro	Val	Ile	Gly	Leu	Gly	Phe	Ile	Val	Pro	Trp	Ser	Glu	Ile		
		195				200						205					
cgc	aaa	aac	ttg	ggc	ttc	gtc	gcc	att	gcc	gtc	ttc	tcc	tgc	acc	att	672	
Arg	Lys	Asn	Leu	Gly	Phe	Val	Ala	Ile	Ala	Val	Phe	Ser	Cys	Thr	Ile		
	210					215					220						
cct	tat	gtc	gca	ttg	gcg	atg	gtc	aac	gaa	gaa	ttc	ccg	tcg	ctc	gtc	720	
Pro	Tyr	Val	Ala	Leu	Ala	Met	Val	Asn	Glu	Glu	Phe	Pro	Ser	Leu	Val		
225				230					235					240			
gcc	ggc	gcg	atc	ggc	ctg	atg	gtg	tcc	gta	ttc	gcc	gcc	aac	caa	ggc	768	
Ala	Gly	Ala	Ile	Gly	Leu	Met	Val	Ser	Val	Phe	Ala	Ala	Asn	Gln	Gly		
			245					250					255				
tgg	ggc	ttg	agc	aaa	gac	cac	gcc	aaa	gac	ccg	aat	gcc	gaa	aaa	gtg	816	
Trp	Gly	Leu	Ser	Lys	Asp	His	Ala	Lys	Asp	Pro	Asn	Ala	Glu	Lys	Val		
		260					265						270				
ccg	ttc	gcc	caa	gtc	gcc	aaa	gca	ctc	gcc	cct	ttg	ggc	atg	ctg	atc	864	
Pro	Phe	Ala	Gln	Val	Ala	Lys	Ala	Leu	Ala	Pro	Leu	Gly	Met	Leu	Ile		
		275					280					285					
ggc	atg	ctg	gtg	gtt	acg	cgc	atc	aaa	cag	ctc	ggc	atc	aaa	ggc	att	912	

Gly Met Leu Val Val Thr Arg Ile Lys Gln Leu Gly Ile Lys Gly Ile	
290	300
ttg acc agc aaa gaa gaa tgg ttc agc ttc caa ctg ccg ttt gat ttg	960
Leu Thr Ser Lys Glu Glu Trp Phe Ser Phe Gln Leu Pro Phe Asp Leu	
305	320
tcc aaa atc acc gtc agc gac tcc ctg acg att act ttc ggc aat att	1008
Ser Lys Ile Thr Val Ser Asp Ser Leu Thr Ile Thr Phe Gly Asn Ile	
325	335
ttc gga caa gat gtc agc gcg tct tac caa acg ctg tac gtc ccg gct	1056
Phe Gly Gln Asp Val Ser Ala Ser Tyr Gln Thr Leu Tyr Val Pro Ala	
340	350
tgg att ccg ttt gtg ctg acc gtt tgg att tgc atc ctg ctg tat aaa	1104
Trp Ile Pro Phe Val Leu Thr Val Trp Ile Cys Ile Leu Leu Tyr Lys	
355	365
acc aaa ttc aaa gat gcc tgg acg att tat tcc gta act ttc aat caa	1152
Thr Lys Phe Lys Asp Ala Trp Thr Ile Tyr Ser Val Thr Phe Asn Gln	
370	380
acc aaa aaa ccg ctg ctt gcc ctg atg ggc gcg ctg att atg gtt cag	1200
Thr Lys Lys Pro Leu Leu Ala Leu Met Gly Ala Leu Ile Met Val Gln	
385	400
ctg atg ctg gtc ggc ggc gac aat tcg atg gtg aaa atc atc ggt aag	1248
Leu Met Leu Val Gly Gly Asp Asn Ser Met Val Lys Ile Ile Gly Lys	
405	415
gaa ttt gcc gca atg gcg ggc gaa cac tgg gtt tat ttc tcg ccg tat	1296
Glu Phe Ala Ala Met Ala Gly Glu His Trp Val Tyr Phe Ser Pro Tyr	
420	430
ctg ggc gcg atc ggt gcg ttc ttc tcc ggt tcc aac acc gtg tcc aac	1344
Leu Gly Ala Ile Gly Ala Phe Phe Ser Gly Ser Asn Thr Val Ser Asn	
435	445
ctg acc ttc ggc ccg att cag cag caa atc gcc ttg gat acc ggc ctg	1392
Leu Thr Phe Gly Pro Ile Gln Gln Gln Ile Ala Leu Asp Thr Gly Leu	
450	460
tcc gtt acc ctg att ctg gcg ttg cag tcc gtc ggc ggc gcg atg ggc	1440
Ser Val Thr Leu Ile Leu Ala Leu Gln Ser Val Gly Gly Ala Met Gly	
465	480
aat atg gtg tgc ctc aac aac atc atc gcc gta tgt acc gta ttg gat	1488

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Asn Met Val Cys Leu Asn Asn Ile Ile Ala Val Cys Thr Val Leu Asp
      485                      490                      495

gtg aaa aat tcc gaa ggt gcg att atc aag aaa acc gtt atc ccg atg 1536
Val Lys Asn Ser Glu Gly Ala Ile Ile Lys Lys Thr Val Ile Pro Met
      500                      505                      510

gcg att tac ggc gtg att gcc gtc gtc gcg gca atg att ttc ttc ctc 1584
Ala Ile Tyr Gly Val Ile Ala Val Val Ala Ala Met Ile Phe Phe Leu
      515                      520                      525

<210> 90
<211> 528
<212> PRT
<213> Neisseria meningitidis

<400> 90
Met Ala Leu Phe Leu Ser Ile Phe Pro Ile Val Leu Leu Ile Trp Leu
  1              5              10              15

Met Val Lys Lys Asn Ser Met Pro Ser Tyr Val Ala Leu Pro Ile Thr
      20              25              30

Ala Val Leu Ile Tyr Ala Ile Lys Leu Phe Tyr Phe Asp Asp Ala Gly
      35              40              45

Met Leu Leu Asn Ala Thr Ala Ala Ser Gly Leu Val Lys Thr Leu Thr
      50              55              60

Pro Ile Thr Val Ile Phe Gly Ala Ile Met Phe Asn Arg Met Met Glu
      65              70              75              80

Thr Thr Gly Cys Ile Asp Val Ile Arg Lys Trp Leu Ala Thr Ile Ser
      85              90              95

Pro Asn Pro Val Ala Gln Leu Met Ile Ile Gly Trp Ala Phe Ala Phe
      100             105             110

Met Ile Glu Gly Ala Ser Gly Phe Gly Thr Pro Ala Ala Ile Ala Ala
      115             120             125

Pro Ile Leu Met Ser Leu Gly Phe Asn Pro Leu Lys Val Ala Ile Phe
      130             135             140

Thr Leu Val Met Asn Ser Val Pro Val Ser Phe Gly Ala Val Gly Thr
      145             150             155             160

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Pro Thr Trp Phe Gly Phe Ala Pro Leu Asn Leu Ser Ala Glu Asp Ile  
 165 170 175  
 Leu Ala Ile Gly Arg Gln Thr Gly Val Met His Phe Phe Ala Gly Phe  
 180 185 190  
 Val Ile Pro Val Ile Gly Leu Gly Phe Ile Val Pro Trp Ser Glu Ile  
 195 200 205  
 Arg Lys Asn Leu Gly Phe Val Ala Ile Ala Val Phe Ser Cys Thr Ile  
 210 215 220  
 Pro Tyr Val Ala Leu Ala Met Val Asn Glu Glu Phe Pro Ser Leu Val  
 225 230 235 240  
 Ala Gly Ala Ile Gly Leu Met Val Ser Val Phe Ala Ala Asn Gln Gly  
 245 250 255  
 Trp Gly Leu Ser Lys Asp His Ala Lys Asp Pro Asn Ala Glu Lys Val  
 260 265 270  
 Pro Phe Ala Gln Val Ala Lys Ala Leu Ala Pro Leu Gly Met Leu Ile  
 275 280 285  
 Gly Met Leu Val Val Thr Arg Ile Lys Gln Leu Gly Ile Lys Gly Ile  
 290 295 300  
 Leu Thr Ser Lys Glu Glu Trp Phe Ser Phe Gln Leu Pro Phe Asp Leu  
 305 310 315 320  
 Ser Lys Ile Thr Val Ser Asp Ser Leu Thr Ile Thr Phe Gly Asn Ile  
 325 330 335  
 Phe Gly Gln Asp Val Ser Ala Ser Tyr Gln Thr Leu Tyr Val Pro Ala  
 340 345 350  
 Trp Ile Pro Phe Val Leu Thr Val Trp Ile Cys Ile Leu Leu Tyr Lys  
 355 360 365  
 Thr Lys Phe Lys Asp Ala Trp Thr Ile Tyr Ser Val Thr Phe Asn Gln  
 370 375 380  
 Thr Lys Lys Pro Leu Leu Ala Leu Met Gly Ala Leu Ile Met Val Gln  
 385 390 395 400  
 Leu Met Leu Val Gly Gly Asp Asn Ser Met Val Lys Ile Ile Gly Lys  
 405 410 415

Glu Phe Ala Ala Met Ala Gly Glu His Trp Val Tyr Phe Ser Pro Tyr  
 420 425 430

Leu Gly Ala Ile Gly Ala Phe Phe Ser Gly Ser Asn Thr Val Ser Asn  
 435 440 445

Leu Thr Phe Gly Pro Ile Gln Gln Gln Ile Ala Leu Asp Thr Gly Leu  
 450 455 460

Ser Val Thr Leu Ile Leu Ala Leu Gln Ser Val Gly Gly Ala Met Gly  
 465 470 475 480

Asn Met Val Cys Leu Asn Asn Ile Ile Ala Val Cys Thr Val Leu Asp  
 485 490 495

Val Lys Asn Ser Glu Gly Ala Ile Ile Lys Lys Thr Val Ile Pro Met  
 500 505 510

Ala Ile Tyr Gly Val Ile Ala Val Val Ala Ala Met Ile Phe Phe Leu  
 515 520 525

<210> 91

<211> 1686

<212> DNA

<213> Neisseria meningitidis

<220>

<221> CDS

<222> (1)..(1686)

<400> 91

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 Met Leu Gln Ser Glu Asn Ser Lys Asn Leu Ile Ser Cys Ser Ile Lys  
 1 5 10 15

gct tta cca atc atg att tct acc aac ggc atc acc atg cag ttc ggc 96  
 Ala Leu Pro Ile Met Ile Ser Thr Asn Gly Ile Thr Met Gln Phe Gly  
 20 25 30

gcg aag ccg ctg ttt gaa aac gta tcc gtt aaa ttc ggc gaa ggc aac 144  
 Ala Lys Pro Leu Phe Glu Asn Val Ser Val Lys Phe Gly Glu Gly Asn  
 35 40 45

cgc tac ggt ttg atc ggc gcg aac ggc tca ggc aaa tcc acc ttc atg 192  
 Arg Tyr Gly Leu Ile Gly Ala Asn Gly Ser Gly Lys Ser Thr Phe Met  
 50 55 60

aaa atc ctc ggc ggc gat ttg gaa cag aca gcc ggc gaa gtg gcg att	240
Lys Ile Leu Gly Gly Asp Leu Glu Gln Thr Ala Gly Glu Val Ala Ile	
65 70 75 80	
gaa aac ggc gtg cgt ttg ggt aaa ttg cgc caa gac cag ttt gcc tac	288
Glu Asn Gly Val Arg Leu Gly Lys Leu Arg Gln Asp Gln Phe Ala Tyr	
85 90 95	
gaa gat atg cgc gtg ctg gac gtg gta atg atg ggt cac acc gaa atg	336
Glu Asp Met Arg Val Leu Asp Val Val Met Met Gly His Thr Glu Met	
100 105 110	
tgg gcg gcg atg acc gaa cgt gat gcg att tac gcc aat ccc gaa gcc	384
Trp Ala Ala Met Thr Glu Arg Asp Ala Ile Tyr Ala Asn Pro Glu Ala	
115 120 125	
acc gaa gac gac tac atg aaa gcc gca gaa ctg gaa gcc aag ttc gcc	432
Thr Glu Asp Asp Tyr Met Lys Ala Ala Glu Leu Glu Ala Lys Phe Ala	
130 135 140	
gaa tac gac ggc tac acc gcc gaa gcg cgt gcc gcc gag ttg ttg agc	480
Glu Tyr Asp Gly Tyr Thr Ala Glu Ala Arg Ala Ala Glu Leu Leu Ser	
145 150 155 160	
ggc gtg ggc att tcc gaa gat ttg cac aat gca acc atg gca gaa gtt	528
Gly Val Gly Ile Ser Glu Asp Leu His Asn Ala Thr Met Ala Glu Val	
165 170 175	
gcc ccg ggc ttc aaa ctg cgc gta ttg ctg gcg caa gcc ctg ttc tcc	576
Ala Pro Gly Phe Lys Leu Arg Val Leu Leu Ala Gln Ala Leu Phe Ser	
180 185 190	
aag ccg gat gta ttg ctc ttg gac gaa ccg acc aat aac ttg gac att	624
Lys Pro Asp Val Leu Leu Leu Asp Glu Pro Thr Asn Asn Leu Asp Ile	
195 200 205	
aat acc atc cgt tgg ttg gaa ggc gtg ttg aac cag tac gac tcc acg	672
Asn Thr Ile Arg Trp Leu Glu Gly Val Leu Asn Gln Tyr Asp Ser Thr	
210 215 220	
atg att atc atc tcg cac gac cgc cac ttc ttg aac gaa gtc tgc acg	720
Met Ile Ile Ile Ser His Asp Arg His Phe Leu Asn Glu Val Cys Thr	
225 230 235 240	
cat atg gca gat ttg gat tac aac acc atc acc atc tat ccg ggc aac	768
His Met Ala Asp Leu Asp Tyr Asn Thr Ile Thr Ile Tyr Pro Gly Asn	
245 250 255	

tac gac gac tat atg ctc gcc tcc gcc caa tcg cgc gaa cgc gcc ctg	816
Tyr Asp Asp Tyr Met Leu Ala Ser Ala Gln Ser Arg Glu Arg Ala Leu	
260 265 270	
aaa gac aat gcc aag gcg aag gaa aaa ttg cag gaa ttg caa gaa ttt	864
Lys Asp Asn Ala Lys Ala Lys Glu Lys Leu Gln Glu Leu Gln Glu Phe	
275 280 285	
gtg gcg cgg ttc agt gcc aac aaa tcc aaa gcc cgt cag gca acc agc	912
Val Ala Arg Phe Ser Ala Asn Lys Ser Lys Ala Arg Gln Ala Thr Ser	
290 295 300	
cgt ctg aaa cag gca gac aaa atc aaa tcg gag atg gtc gag gtc aaa	960
Arg Leu Lys Gln Ala Asp Lys Ile Lys Ser Glu Met Val Glu Val Lys	
305 310 315 320	
ccc tct acc cgt caa aac ccg tat atc cgt ttt gaa gcc gat gaa aaa	1008
Pro Ser Thr Arg Gln Asn Pro Tyr Ile Arg Phe Glu Ala Asp Glu Lys	
325 330 335	
gcc aag ctg cac cgt cag gct gtg gaa gtt gaa aaa ctg gcg aaa cgc	1056
Ala Lys Leu His Arg Gln Ala Val Glu Val Glu Lys Leu Ala Lys Arg	
340 345 350	
ttt gaa acc cag ttg ttt aaa aac ctg aac ttt atc ctt gaa gcg gga	1104
Phe Glu Thr Gln Leu Phe Lys Asn Leu Asn Phe Ile Leu Glu Ala Gly	
355 360 365	
caa cgc ctc gcc atc atc ggc ccg aac ggc gcg ggc aaa tcc acc ctg	1152
Gln Arg Leu Ala Ile Ile Gly Pro Asn Gly Ala Gly Lys Ser Thr Leu	
370 375 380	
ctg aaa ctc ttg gcc ggc gcg tac aac ccc gaa tat tca gac ggt ctg	1200
Leu Lys Leu Leu Ala Gly Ala Tyr Asn Pro Glu Tyr Ser Asp Gly Leu	
385 390 395 400	
ctg ccg gac gaa ggc agc atc aaa tgg gcg gaa aaa gcc agc gtc ggc	1248
Leu Pro Asp Glu Gly Ser Ile Lys Trp Ala Glu Lys Ala Ser Val Gly	
405 410 415	
tac tat ccg caa gat cac gaa aac gac ttc gat gtc gat atg gat ttg	1296
Tyr Tyr Pro Gln Asp His Glu Asn Asp Phe Asp Val Asp Met Asp Leu	
420 425 430	
agc gaa tgg atg cgc caa tgg ggg cag gac ggc gac gac gaa caa gtc	1344
Ser Glu Trp Met Arg Gln Trp Gly Gln Asp Gly Asp Asp Glu Gln Val	
435 440 445	

atc cgc ggc act ttg ggg cgt ttg ctc ttc ggc agt aac gat gtc gtg 1392  
 Ile Arg Gly Thr Leu Gly Arg Leu Leu Phe Gly Ser Asn Asp Val Val  
 450 455 460

aaa aaa gtg aag gtt ctc tcc ggt ggt gaa aaa ggc cgt atg ctt tac 1440  
 Lys Lys Val Lys Val Leu Ser Gly Gly Glu Lys Gly Arg Met Leu Tyr  
 465 470 475 480

ggc aaa ctg ttg ctg ttg aaa ccc aat gtc tta gtc atg gat gaa ccg 1488  
 Gly Lys Leu Leu Leu Leu Lys Pro Asn Val Leu Val Met Asp Glu Pro  
 485 490 495

acc aac cac atg gac atg gaa agc atc gaa tcc ttg aac atg gcg ctg 1536  
 Thr Asn His Met Asp Met Glu Ser Ile Glu Ser Leu Asn Met Ala Leu  
 500 505 510

gaa aaa tac aac ggc acg ctg att ttc gtc tcc cac gac cgt cag ttc 1584  
 Glu Lys Tyr Asn Gly Thr Leu Ile Phe Val Ser His Asp Arg Gln Phe  
 515 520 525

gtt tct tcc ctg gct acc caa atc att gaa ttg gac ggc aaa ggc gga 1632  
 Val Ser Ser Leu Ala Thr Gln Ile Ile Glu Leu Asp Gly Lys Gly Gly  
 530 535 540

tat gaa cac tac ttg ggc gat tac gaa agc tat ctc gag aaa aaa ggc 1680  
 Tyr Glu His Tyr Leu Gly Asp Tyr Glu Ser Tyr Leu Glu Lys Lys Gly  
 545 550 555 560

gta gca 1686  
 Val Ala

<210> 92

<211> 562

<212> PRT

<213> Neisseria meningitidis

<400> 92

Met Leu Gln Ser Glu Asn Ser Lys Asn Leu Ile Ser Cys Ser Ile Lys  
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Ala Leu Pro Ile Met Ile Ser Thr Asn Gly Ile Thr Met Gln Phe Gly  
 20 25 30

Ala Lys Pro Leu Phe Glu Asn Val Ser Val Lys Phe Gly Glu Gly Asn  
 35 40 45



Arg	Tyr	Gly	Leu	Ile	Gly	Ala	Asn	Gly	Ser	Gly	Lys	Ser	Thr	Phe	Met	50	55	60
Lys	Ile	Leu	Gly	Gly	Asp	Leu	Glu	Gln	Thr	Ala	Gly	Glu	Val	Ala	Ile	65	70	75
Glu	Asn	Gly	Val	Arg	Leu	Gly	Lys	Leu	Arg	Gln	Asp	Gln	Phe	Ala	Tyr	85	90	95
Glu	Asp	Met	Arg	Val	Leu	Asp	Val	Val	Met	Met	Gly	His	Thr	Glu	Met	100	105	110
Trp	Ala	Ala	Met	Thr	Glu	Arg	Asp	Ala	Ile	Tyr	Ala	Asn	Pro	Glu	Ala	115	120	125
Thr	Glu	Asp	Asp	Tyr	Met	Lys	Ala	Ala	Glu	Leu	Glu	Ala	Lys	Phe	Ala	130	135	140
Glu	Tyr	Asp	Gly	Tyr	Thr	Ala	Glu	Ala	Arg	Ala	Ala	Glu	Leu	Leu	Ser	145	150	155
Gly	Val	Gly	Ile	Ser	Glu	Asp	Leu	His	Asn	Ala	Thr	Met	Ala	Glu	Val	165	170	175
Ala	Pro	Gly	Phe	Lys	Leu	Arg	Val	Leu	Leu	Ala	Gln	Ala	Leu	Phe	Ser	180	185	190
Lys	Pro	Asp	Val	Leu	Leu	Leu	Asp	Glu	Pro	Thr	Asn	Asn	Leu	Asp	Ile	195	200	205
Asn	Thr	Ile	Arg	Trp	Leu	Glu	Gly	Val	Leu	Asn	Gln	Tyr	Asp	Ser	Thr	210	215	220
Met	Ile	Ile	Ile	Ser	His	Asp	Arg	His	Phe	Leu	Asn	Glu	Val	Cys	Thr	225	230	235
His	Met	Ala	Asp	Leu	Asp	Tyr	Asn	Thr	Ile	Thr	Ile	Tyr	Pro	Gly	Asn	245	250	255
Tyr	Asp	Asp	Tyr	Met	Leu	Ala	Ser	Ala	Gln	Ser	Arg	Glu	Arg	Ala	Leu	260	265	270
Lys	Asp	Asn	Ala	Lys	Ala	Lys	Glu	Lys	Leu	Gln	Glu	Leu	Gln	Glu	Phe	275	280	285
Val	Ala	Arg	Phe	Ser	Ala	Asn	Lys	Ser	Lys	Ala	Arg	Gln	Ala	Thr	Ser	290	295	300

Arg	Leu	Lys	Gln	Ala	Asp	Lys	Ile	Lys	Ser	Glu	Met	Val	Glu	Val	Lys	305	310	315	320
Pro	Ser	Thr	Arg	Gln	Asn	Pro	Tyr	Ile	Arg	Phe	Glu	Ala	Asp	Glu	Lys	325	330	335	
Ala	Lys	Leu	His	Arg	Gln	Ala	Val	Glu	Val	Glu	Lys	Leu	Ala	Lys	Arg	340	345	350	
Phe	Glu	Thr	Gln	Leu	Phe	Lys	Asn	Leu	Asn	Phe	Ile	Leu	Glu	Ala	Gly	355	360	365	
Gln	Arg	Leu	Ala	Ile	Ile	Gly	Pro	Asn	Gly	Ala	Gly	Lys	Ser	Thr	Leu	370	375	380	
Leu	Lys	Leu	Leu	Ala	Gly	Ala	Tyr	Asn	Pro	Glu	Tyr	Ser	Asp	Gly	Leu	385	390	395	400
Leu	Pro	Asp	Glu	Gly	Ser	Ile	Lys	Trp	Ala	Glu	Lys	Ala	Ser	Val	Gly	405	410	415	
Tyr	Tyr	Pro	Gln	Asp	His	Glu	Asn	Asp	Phe	Asp	Val	Asp	Met	Asp	Leu	420	425	430	
Ser	Glu	Trp	Met	Arg	Gln	Trp	Gly	Gln	Asp	Gly	Asp	Asp	Glu	Gln	Val	435	440	445	
Ile	Arg	Gly	Thr	Leu	Gly	Arg	Leu	Leu	Phe	Gly	Ser	Asn	Asp	Val	Val	450	455	460	
Lys	Lys	Val	Lys	Val	Leu	Ser	Gly	Gly	Glu	Lys	Gly	Arg	Met	Leu	Tyr	465	470	475	480
Gly	Lys	Leu	Leu	Leu	Leu	Lys	Pro	Asn	Val	Leu	Val	Met	Asp	Glu	Pro	485	490	495	
Thr	Asn	His	Met	Asp	Met	Glu	Ser	Ile	Glu	Ser	Leu	Asn	Met	Ala	Leu	500	505	510	
Glu	Lys	Tyr	Asn	Gly	Thr	Leu	Ile	Phe	Val	Ser	His	Asp	Arg	Gln	Phe	515	520	525	
Val	Ser	Ser	Leu	Ala	Thr	Gln	Ile	Ile	Glu	Leu	Asp	Gly	Lys	Gly	Gly	530	535	540	
Tyr	Glu	His	Tyr	Leu	Gly	Asp	Tyr	Glu	Ser	Tyr	Leu	Glu	Lys	Lys	Gly	545	550	555	560

Val Ala

&lt;210&gt; 93

&lt;211&gt; 1126

&lt;212&gt; DNA

&lt;213&gt; Neisseria meningitidis

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(1125)

&lt;400&gt; 93

atg aac acc tcg caa cgc aac cgc ctc gtc agc cgc tgg ctc aac tcc 48

Met Asn Thr Ser Gln Arg Asn Arg Leu Val Ser Arg Trp Leu Asn Ser

1

5

10

15

tac gaa cgc tac cgc tac cgc cgc ctc atc cac gcc gtc cgg ctc ggc 96

Tyr Glu Arg Tyr Arg Tyr Arg Arg Leu Ile His Ala Val Arg Leu Gly

20

25

30

ggg gcc gtc ctg ttc gcc acc gcc tcc gcc cgg ctg ctc cac ctc caa 144

Gly Ala Val Leu Phe Ala Thr Ala Ser Ala Arg Leu Leu His Leu Gln

35

40

45

cac gcc gag tgg ata ggg atg acc gtc ttc gtc gtc ctc ggc atg ctc 192

His Gly Glu Trp Ile Gly Met Thr Val Phe Val Val Leu Gly Met Leu

50

55

60

cag ttt caa ggg gcg att tac tcc aag gcg gtg gaa cgt atg ctc ggc 240

Gln Phe Gln Gly Ala Ile Tyr Ser Lys Ala Val Glu Arg Met Leu Gly

65

70

75

80

acg gtc atc ggg ctg ggc gcg ggt ttg ggc gtt tta tgg ctg aac cag 288

Thr Val Ile Gly Leu Gly Ala Gly Leu Gly Val Leu Trp Leu Asn Gln

85

90

95

cat tat ttc cac ggc aac ctc ctc ttc tac ctc acc gtc ggc acg gca 336

His Tyr Phe His Gly Asn Leu Leu Phe Tyr Leu Thr Val Gly Thr Ala

100

105

110

agc gca ctg gcc ggc tgg gcg gcg gtc ggc aaa aac ggc tac gtc cct 384

Ser Ala Leu Ala Gly Trp Ala Ala Val Gly Lys Asn Gly Tyr Val Pro

115

120

125

atg ctg gcg ggg ctg acg atg tgc atg ctc atc ggc gac aac ggc agc 432

Met	Leu	Ala	Gly	Leu	Thr	Met	Cys	Met	Leu	Ile	Gly	Asp	Asn	Gly	Ser	
130						135					140					
gaa	tgg	ttc	gac	agc	ggc	ctg	atg	cgc	gcg	atg	aac	gtc	ctc	atc	ggc	480
Glu	Trp	Phe	Asp	Ser	Gly	Leu	Met	Arg	Ala	Met	Asn	Val	Leu	Ile	Gly	
145					150					155					160	
gcg	gcc	atc	gcc	atc	gcc	gcc	gcc	aaa	ctg	ctg	ccg	ctg	aaa	tcc	aca	528
Ala	Ala	Ile	Ala	Ile	Ala	Ala	Ala	Lys	Leu	Leu	Pro	Leu	Lys	Ser	Thr	
				165					170					175		
ctg	atg	tgg	cgt	ttc	atg	ctt	gcc	gac	aac	ctg	acc	gac	tgc	agc	aaa	576
Leu	Met	Trp	Arg	Phe	Met	Leu	Ala	Asp	Asn	Leu	Thr	Asp	Cys	Ser	Lys	
			180					185					190			
atg	att	gcc	gaa	atc	agc	aac	ggc	agg	cgc	atg	acc	cgc	gaa	cgc	ctc	624
Met	Ile	Ala	Glu	Ile	Ser	Asn	Gly	Arg	Arg	Met	Thr	Arg	Glu	Arg	Leu	
		195					200					205				
gaa	gag	aac	atg	gcg	aaa	atg	cgc	caa	atc	aac	gca	cgc	atg	gtc	aaa	672
Glu	Glu	Asn	Met	Ala	Lys	Met	Arg	Gln	Ile	Asn	Ala	Arg	Met	Val	Lys	
		210				215					220					
agc	cgc	agc	cac	ctc	gcc	gcc	aca	tcg	ggc	gaa	agc	cgc	atc	agc	ccc	720
Ser	Arg	Ser	His	Leu	Ala	Ala	Thr	Ser	Gly	Glu	Ser	Arg	Ile	Ser	Pro	
225					230					235					240	
gcc	atg	atg	gaa	gcc	atg	cag	cac	gcc	cac	cgt	aaa	att	gtc	aac	acc	768
Ala	Met	Met	Glu	Ala	Met	Gln	His	Ala	His	Arg	Lys	Ile	Val	Asn	Thr	
				245					250					255		
acc	gag	ctg	ctc	ctg	acc	acc	gcc	gcc	aag	ctg	caa	tct	ccc	aaa	ctc	816
Thr	Glu	Leu	Leu	Leu	Thr	Thr	Ala	Ala	Lys	Leu	Gln	Ser	Pro	Lys	Leu	
				260				265					270			
aac	ggc	agc	gaa	atc	cgg	ctg	ctt	gac	cgc	cac	ttc	aca	ctg	ctc	caa	864
Asn	Gly	Ser	Glu	Ile	Arg	Leu	Leu	Asp	Arg	His	Phe	Thr	Leu	Leu	Gln	
		275					280				285					
acc	gac	ctg	caa	caa	acc	gtc	gcc	ctt	atc	aac	ggc	aga	cac	gcc	cgc	912
Thr	Asp	Leu	Gln	Gln	Thr	Val	Ala	Leu	Ile	Asn	Gly	Arg	His	Ala	Arg	
		290				295					300					
cgc	atc	cgc	atc	gac	acc	gcc	atc	aac	ccc	gaa	ctg	gaa	gcc	ctc	gcc	960
Arg	Ile	Arg	Ile	Asp	Thr	Ala	Ile	Asn	Pro	Glu	Leu	Glu	Ala	Leu	Ala	
305					310					315					320	
gaa	cac	ctc	cac	tac	caa	tgg	cag	ggc	ttc	ctc	tgg	ctc	agc	acc	aat	1008

Glu	His	Leu	His	Tyr	Gln	Trp	Gln	Gly	Phe	Leu	Trp	Leu	Ser	Thr	Asn		
				325					330						335		
atg	cgt	cag	gaa	att	tcc	gcc	ctc	gtc	atc	ctg	ctg	caa	cgc	acc	cgc	1056	
Met	Arg	Gln	Glu	Ile	Ser	Ala	Leu	Val	Ile	Leu	Leu	Gln	Arg	Thr	Arg		
			340					345					350				
cgc	aaa	tgg	ctg	gat	gcc	cac	gaa	cgc	caa	cac	ctg	cgc	caa	agc	ctg	1104	
Arg	Lys	Trp	Leu	Asp	Ala	His	Glu	Arg	Gln	His	Leu	Arg	Gln	Ser	Leu		
			355				360					365					
ctt	gaa	aca	cgg	gaa	cac	agt	t									1126	
Leu	Glu	Thr	Arg	Glu	His	Ser											
	370					375											
<210> 94																	
<211> 375																	
<212> PRT																	
<213> Neisseria meningitidis																	
<400> 94																	
Met	Asn	Thr	Ser	Gln	Arg	Asn	Arg	Leu	Val	Ser	Arg	Trp	Leu	Asn	Ser		
1				5					10					15			
Tyr	Glu	Arg	Tyr	Arg	Tyr	Arg	Arg	Leu	Ile	His	Ala	Val	Arg	Leu	Gly		
			20					25					30				
Gly	Ala	Val	Leu	Phe	Ala	Thr	Ala	Ser	Ala	Arg	Leu	Leu	His	Leu	Gln		
		35					40					45					
His	Gly	Glu	Trp	Ile	Gly	Met	Thr	Val	Phe	Val	Val	Leu	Gly	Met	Leu		
	50					55					60						
Gln	Phe	Gln	Gly	Ala	Ile	Tyr	Ser	Lys	Ala	Val	Glu	Arg	Met	Leu	Gly		
65					70					75					80		
Thr	Val	Ile	Gly	Leu	Gly	Ala	Gly	Leu	Gly	Val	Leu	Trp	Leu	Asn	Gln		
			85					90						95			
His	Tyr	Phe	His	Gly	Asn	Leu	Leu	Phe	Tyr	Leu	Thr	Val	Gly	Thr	Ala		
			100					105					110				
Ser	Ala	Leu	Ala	Gly	Trp	Ala	Ala	Val	Gly	Lys	Asn	Gly	Tyr	Val	Pro		
			115				120					125					
Met	Leu	Ala	Gly	Leu	Thr	Met	Cys	Met	Leu	Ile	Gly	Asp	Asn	Gly	Ser		
130						135					140						

Glu Trp Phe Asp Ser Gly Leu Met Arg Ala Met Asn Val Leu Ile Gly  
 145 150 155 160  
 Ala Ala Ile Ala Ile Ala Ala Ala Lys Leu Leu Pro Leu Lys Ser Thr  
 165 170 175  
 Leu Met Trp Arg Phe Met Leu Ala Asp Asn Leu Thr Asp Cys Ser Lys  
 180 185 190  
 Met Ile Ala Glu Ile Ser Asn Gly Arg Arg Met Thr Arg Glu Arg Leu  
 195 200 205  
 Glu Glu Asn Met Ala Lys Met Arg Gln Ile Asn Ala Arg Met Val Lys  
 210 215 220  
 Ser Arg Ser His Leu Ala Ala Thr Ser Gly Glu Ser Arg Ile Ser Pro  
 225 230 235 240  
 Ala Met Met Glu Ala Met Gln His Ala His Arg Lys Ile Val Asn Thr  
 245 250 255  
 Thr Glu Leu Leu Leu Thr Thr Ala Ala Lys Leu Gln Ser Pro Lys Leu  
 260 265 270  
 Asn Gly Ser Glu Ile Arg Leu Leu Asp Arg His Phe Thr Leu Leu Gln  
 275 280 285  
 Thr Asp Leu Gln Gln Thr Val Ala Leu Ile Asn Gly Arg His Ala Arg  
 290 295 300  
 Arg Ile Arg Ile Asp Thr Ala Ile Asn Pro Glu Leu Glu Ala Leu Ala  
 305 310 315 320  
 Glu His Leu His Tyr Gln Trp Gln Gly Phe Leu Trp Leu Ser Thr Asn  
 325 330 335  
 Met Arg Gln Glu Ile Ser Ala Leu Val Ile Leu Leu Gln Arg Thr Arg  
 340 345 350  
 Arg Lys Trp Leu Asp Ala His Glu Arg Gln His Leu Arg Gln Ser Leu  
 355 360 365  
 Leu Glu Thr Arg Glu His Ser  
 370 375

&lt;210&gt; 95

&lt;211&gt; 1725

&lt;212&gt; DNA

<213> *Neisseria meningitidis*

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(1725)

&lt;400&gt; 95

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atg cag cta tca ggc gcg caa atc ata gtg cag agt ctc aaa gcc gaa      48
Met Gln Leu Ser Gly Ala Gln Ile Ile Val Gln Ser Leu Lys Ala Glu
   1             5             10             15

ggt gtc gag tac gtt ttc ggt tat ccc ggc ggt gcg gtt atc gaa atc      96
Gly Val Glu Tyr Val Phe Gly Tyr Pro Gly Gly Ala Val Ile Glu Ile
          20             25             30

tac gat gcc ctt ttc caa ctc aat aaa ttc aag cac att ctg acc cgt      144
Tyr Asp Ala Leu Phe Gln Leu Asn Lys Phe Lys His Ile Leu Thr Arg
          35             40             45

cac gag cag gcg gca gta cac gcg gca gat gcg tat gcg cgc gtc agc      192
His Glu Gln Ala Ala Val His Ala Ala Asp Ala Tyr Ala Arg Val Ser
          50             55             60

ggt aag gtg ggc gtg gca ttg gtt aca tcc ggc ccg ggc gtt acc aat      240
Gly Lys Val Gly Val Ala Leu Val Thr Ser Gly Pro Gly Val Thr Asn
          65             70             75             80

gca ctg acc ggt att gct act gcc tat acg gat tcg att ccg atg gtg      288
Ala Leu Thr Gly Ile Ala Thr Ala Tyr Thr Asp Ser Ile Pro Met Val
          85             90             95

gtc atc agc ggg cag gta ggc aat tcc ctg att ggt acg gat gcg ttc      336
Val Ile Ser Gly Gln Val Gly Asn Ser Leu Ile Gly Thr Asp Ala Phe
          100            105            110

caa gaa gtt gat acg gtg ggt att acc cgt ccg tgc gtc aaa cac aat      384
Gln Glu Val Asp Thr Val Gly Ile Thr Arg Pro Cys Val Lys His Asn
          115            120            125

ttc ctg gtt acg gac atc aat gag ttg gcg gaa acc att aaa aag gcg      432
Phe Leu Val Thr Asp Ile Asn Glu Leu Ala Glu Thr Ile Lys Lys Ala
          130            135            140

ttc caa att gcc gca agc ggc cga ccg ggg ccc gtg gtg gtt gat gtc      480
Phe Gln Ile Ala Ala Ser Gly Arg Pro Gly Pro Val Val Val Asp Val

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145	150	155	160	
ccg aaa gat gtt acg cag gcg atg gcg aaa ttc agc tat cct cag gaa	528			
Pro Lys Asp Val Thr Gln Ala Met Ala Lys Phe Ser Tyr Pro Gln Glu				
165	170	175		
gac att ttt atc cgt tcg tat caa ccg gtt gtt caa ggg cat atc ggt	576			
Asp Ile Phe Ile Arg Ser Tyr Gln Pro Val Val Gln Gly His Ile Gly				
180	185	190		
cag att aaa aag gcc gtg cag atg ttg gca tct gcc aaa cgt ccg gtc	624			
Gln Ile Lys Lys Ala Val Gln Met Leu Ala Ser Ala Lys Arg Pro Val				
195	200	205		
gtc tat ttt ggc ggc ggc gtg gtg ttg ggt aat gct tct gaa gag ctg	672			
Val Tyr Phe Gly Gly Gly Val Val Leu Gly Asn Ala Ser Glu Glu Leu				
210	215	220		
acc cga ttt gtc cga atg acg ggt gct ccg tgc acg ggt acg ctg atg	720			
Thr Arg Phe Val Arg Met Thr Gly Ala Pro Cys Thr Gly Thr Leu Met				
225	230	235	240	
ggc ttg ggc gct tat cct tcc ggc gac cgc caa ttc ctc ggt atg ctc	768			
Gly Leu Gly Ala Tyr Pro Ser Gly Asp Arg Gln Phe Leu Gly Met Leu				
245	250	255		
ggt atg cac ggt act tac gag gca aac ctt gcc atg cag aat gcg gat	816			
Gly Met His Gly Thr Tyr Glu Ala Asn Leu Ala Met Gln Asn Ala Asp				
260	265	270		
gtc gtt ctt gcc gta ggt gcg cgt ttt gac gac cgt gtg gtt tcc gta	864			
Val Val Leu Ala Val Gly Ala Arg Phe Asp Asp Arg Val Val Ser Val				
275	280	285		
ccg tcc aaa ttt ttc gag aag gcg aag aag gtt atc cat atc gat gtc	912			
Pro Ser Lys Phe Phe Glu Lys Ala Lys Lys Val Ile His Ile Asp Val				
290	295	300		
gat cct tcc agc atc gcc aaa cgc gtg aag gcg gac att ccg att gtc	960			
Asp Pro Ser Ser Ile Ala Lys Arg Val Lys Ala Asp Ile Pro Ile Val				
305	310	315	320	
ggc gac gtg aaa aac gtt ttg tcc gag atg gtt gcg ctg tgg caa aaa	1008			
Gly Asp Val Lys Asn Val Leu Ser Glu Met Val Ala Leu Trp Gln Lys				
325	330	335		
caa gag tcc gtg ccg tct gaa gat gct ttg ggc aaa tgg tgg aaa acc	1056			
Gln Glu Ser Val Pro Ser Glu Asp Ala Leu Gly Lys Trp Trp Lys Thr				



340	345	350	
ata gag gaa tgg cgt tcc cgc gat tgc ttg tgg ttt gac aac ggc agc			1104
Ile Glu Glu Trp Arg Ser Arg Asp Cys Leu Trp Phe Asp Asn Gly Ser			
355	360	365	
gaa att atc aag cca caa tat gtg att cag aag ctt gcc gag att acc			1152
Glu Ile Ile Lys Pro Gln Tyr Val Ile Gln Lys Leu Ala Glu Ile Thr			
370	375	380	
ggc aat tcg gca atc atc aca tcg gat gta ggg cag cat caa atg ttt			1200
Gly Asn Ser Ala Ile Ile Thr Ser Asp Val Gly Gln His Gln Met Phe			
385	390	395	400
gcg gct caa tat tat ccc ttc gaa cgt ccg cgc caa tgg ctc aac tcc			1248
Ala Ala Gln Tyr Tyr Pro Phe Glu Arg Pro Arg Gln Trp Leu Asn Ser			
405	410	415	
ggc ggt ttg ggt acg atg ggc gtt ggt ctg cct tat gcg att ggt gca			1296
Gly Gly Leu Gly Thr Met Gly Val Gly Leu Pro Tyr Ala Ile Gly Ala			
420	425	430	
aaa ctt gcc gcc ccg gat caa gac gta ttc tgt att acc ggc gac ggc			1344
Lys Leu Ala Ala Pro Asp Gln Asp Val Phe Cys Ile Thr Gly Asp Gly			
435	440	445	
tcg atc cag atg aac atc caa gag ctg tcc acc tgt ttc caa tat cg			1392
Ser Ile Gln Met Asn Ile Gln Glu Leu Ser Thr Cys Phe Gln Tyr Arg			
450	455	460	
att ccg gtt aac gtc att acg ctg aac aac ggt tat ctc ggt atg gta			1440
Ile Pro Val Asn Val Ile Thr Leu Asn Asn Gly Tyr Leu Gly Met Val			
465	470	475	480
cgc cag tgg cag gaa ata tat tac ggc gga cga gag tcg gaa acc tat			1488
Arg Gln Trp Gln Glu Ile Tyr Tyr Gly Gly Arg Glu Ser Glu Thr Tyr			
485	490	495	
ttc gat tct ttg ccc gat ttc gtc aaa ctt gcc gag gca tac ggc cat			1536
Phe Asp Ser Leu Pro Asp Phe Val Lys Leu Ala Glu Ala Tyr Gly His			
500	505	510	
atc ggt atc cgc gtg gac aag aag tct gat gtg gaa ggt gcg ttg ttg			1584
Ile Gly Ile Arg Val Asp Lys Lys Ser Asp Val Glu Gly Ala Leu Leu			
515	520	525	
gaa gca ttg aac caa aaa gac agg ctg gtg ttt atc gac ttc ctg acc			1632
Glu Ala Leu Asn Gln Lys Asp Arg Leu Val Phe Ile Asp Phe Leu Thr			

530                                      535                                      540  
 gac cag aaa cag aat gtg atg ccc atg gtc ggc aac ggc aaa ggt ttg 1680  
 Asp Gln Lys Gln Asn Val Met Pro Met Val Gly Asn Gly Lys Gly Leu  
 545                                      550                                      555                                      560  
  
 gac gaa atg gta ctt ccg ccg cat atg cgt gcg gac gga aag gcg 1725  
 Asp Glu Met Val Leu Pro Pro His Met Arg Ala Asp Gly Lys Ala  
                                     565                                      570                                      575  
  
 <210> 96  
 <211> 575  
 <212> PRT  
 <213> Neisseria meningitidis  
  
 <400> 96  
 Met Gln Leu Ser Gly Ala Gln Ile Ile Val Gln Ser Leu Lys Ala Glu  
   1                                      5                                      10                                      15  
  
 Gly Val Glu Tyr Val Phe Gly Tyr Pro Gly Gly Ala Val Ile Glu Ile  
                                     20                                      25                                      30  
  
 Tyr Asp Ala Leu Phe Gln Leu Asn Lys Phe Lys His Ile Leu Thr Arg  
                                     35                                      40                                      45  
  
 His Glu Gln Ala Ala Val His Ala Ala Asp Ala Tyr Ala Arg Val Ser  
                                     50                                      55                                      60  
  
 Gly Lys Val Gly Val Ala Leu Val Thr Ser Gly Pro Gly Val Thr Asn  
   65                                      70                                      75                                      80  
  
 Ala Leu Thr Gly Ile Ala Thr Ala Tyr Thr Asp Ser Ile Pro Met Val  
                                     85                                      90                                      95  
  
 Val Ile Ser Gly Gln Val Gly Asn Ser Leu Ile Gly Thr Asp Ala Phe  
                                     100                                      105                                      110  
  
 Gln Glu Val Asp Thr Val Gly Ile Thr Arg Pro Cys Val Lys His Asn  
                                     115                                      120                                      125  
  
 Phe Leu Val Thr Asp Ile Asn Glu Leu Ala Glu Thr Ile Lys Lys Ala  
   130                                      135                                      140  
  
 Phe Gln Ile Ala Ala Ser Gly Arg Pro Gly Pro Val Val Val Asp Val  
   145                                      150                                      155                                      160  
  
 Pro Lys Asp Val Thr Gln Ala Met Ala Lys Phe Ser Tyr Pro Gln Glu

	165		170		175
Asp Ile Phe Ile Arg Ser Tyr Gln Pro Val Val Gln Gly His Ile Gly					
	180		185		190
Gln Ile Lys Lys Ala Val Gln Met Leu Ala Ser Ala Lys Arg Pro Val					
	195		200		205
Val Tyr Phe Gly Gly Gly Val Val Leu Gly Asn Ala Ser Glu Glu Leu					
	210		215		220
Thr Arg Phe Val Arg Met Thr Gly Ala Pro Cys Thr Gly Thr Leu Met					
	225		230		235
Gly Leu Gly Ala Tyr Pro Ser Gly Asp Arg Gln Phe Leu Gly Met Leu					
	245		250		255
Gly Met His Gly Thr Tyr Glu Ala Asn Leu Ala Met Gln Asn Ala Asp					
	260		265		270
Val Val Leu Ala Val Gly Ala Arg Phe Asp Asp Arg Val Val Ser Val					
	275		280		285
Pro Ser Lys Phe Phe Glu Lys Ala Lys Lys Val Ile His Ile Asp Val					
	290		295		300
Asp Pro Ser Ser Ile Ala Lys Arg Val Lys Ala Asp Ile Pro Ile Val					
	305		310		315
Gly Asp Val Lys Asn Val Leu Ser Glu Met Val Ala Leu Trp Gln Lys					
	325		330		335
Gln Glu Ser Val Pro Ser Glu Asp Ala Leu Gly Lys Trp Trp Lys Thr					
	340		345		350
Ile Glu Glu Trp Arg Ser Arg Asp Cys Leu Trp Phe Asp Asn Gly Ser					
	355		360		365
Glu Ile Ile Lys Pro Gln Tyr Val Ile Gln Lys Leu Ala Glu Ile Thr					
	370		375		380
Gly Asn Ser Ala Ile Ile Thr Ser Asp Val Gly Gln His Gln Met Phe					
	385		390		395
Ala Ala Gln Tyr Tyr Pro Phe Glu Arg Pro Arg Gln Trp Leu Asn Ser					
	405		410		415
Gly Gly Leu Gly Thr Met Gly Val Gly Leu Pro Tyr Ala Ile Gly Ala					

420                                      425                                      430  
 Lys Leu Ala Ala Pro Asp Gln Asp Val Phe Cys Ile Thr Gly Asp Gly  
                     435                                      440                                      445  
 Ser Ile Gln Met Asn Ile Gln Glu Leu Ser Thr Cys Phe Gln Tyr Arg  
                     450                                      455                                      460  
 Ile Pro Val Asn Val Ile Thr Leu Asn Asn Gly Tyr Leu Gly Met Val  
 465                                      470                                      475                                      480  
 Arg Gln Trp Gln Glu Ile Tyr Tyr Gly Gly Arg Glu Ser Glu Thr Tyr  
                                     485                                      490                                      495  
 Phe Asp Ser Leu Pro Asp Phe Val Lys Leu Ala Glu Ala Tyr Gly His  
                                     500                                      505                                      510  
 Ile Gly Ile Arg Val Asp Lys Lys Ser Asp Val Glu Gly Ala Leu Leu  
                                     515                                      520                                      525  
 Glu Ala Leu Asn Gln Lys Asp Arg Leu Val Phe Ile Asp Phe Leu Thr  
                                     530                                      535                                      540  
 Asp Gln Lys Gln Asn Val Met Pro Met Val Gly Asn Gly Lys Gly Leu  
 545                                      550                                      555                                      560  
 Asp Glu Met Val Leu Pro Pro His Met Arg Ala Asp Gly Lys Ala  
                                     565                                      570                                      575

&lt;210&gt; 97

&lt;211&gt; 570

&lt;212&gt; DNA

&lt;213&gt; Neisseria meningitidis

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(570)

&lt;400&gt; 97

atg gac aat cac gcc gaa gca cac tgg caa aac ggc tgg ctt caa agc 48  
 Met Asp Asn His Ala Glu Ala His Trp Gln Asn Gly Trp Leu Gln Ser  
                     1                                      5                                      10                                      15

ata cgc cat acc ccg tcg ccc aat ttc agc ccg agg gaa acg ggg gaa 96  
 Ile Arg His Thr Pro Ser Pro Asn Phe Ser Pro Arg Glu Thr Gly Glu  
                                     20                                      25                                      30

acg gtt tcc ctg atc gtg ttg cac aac att tca ctg ccg ccg ttc gaa 144  
 Thr Val Ser Leu Ile Val Leu His Asn Ile Ser Leu Pro Pro Phe Glu  
                   35                                  40                                  45

tac ggc acg gat gct gtg gaa aag ctg ttt gcc aac cgg ctc gac ccc 192  
 Tyr Gly Thr Asp Ala Val Glu Lys Leu Phe Ala Asn Arg Leu Asp Pro  
                   50                                  55                                  60

aac gga cat ccg ttc ttc agc ctg ata cac act ttg cgc gta tcc agc 240  
 Asn Gly His Pro Phe Phe Ser Leu Ile His Thr Leu Arg Val Ser Ser  
                   65                                  70                                  75                                  80

cat ttc tta atc aaa cgc gac ggc aaa acg gtg cag ttc gta tca tgc 288  
 His Phe Leu Ile Lys Arg Asp Gly Lys Thr Val Gln Phe Val Ser Cys  
                                   85                                  90                                  95

ggc gat atg gcg tac cac gcg ggc gta tcc tcg ttt cgc gga cgg gaa 336  
 Gly Asp Met Ala Tyr His Ala Gly Val Ser Ser Phe Arg Gly Arg Glu  
                                   100                                  105                                  110

aaa tgc aac gca ttt tcc atc ggc atc gaa ttg gaa ggc tgc gat ttc 384  
 Lys Cys Asn Ala Phe Ser Ile Gly Ile Glu Leu Glu Gly Cys Asp Phe  
                                   115                                  120                                  125

gaa ccc ttt acc gaa gcg caa tac cgt tcg ctc gaa aca ttg ttg gaa 432  
 Glu Pro Phe Thr Glu Ala Gln Tyr Arg Ser Leu Glu Thr Leu Leu Glu  
                   130                                  135                                  140

gca ctc tgc cgc cgc tac ccc gtt acc gca gta acc gga cat cag gac 480  
 Ala Leu Cys Arg Arg Tyr Pro Val Thr Ala Val Thr Gly His Gln Asp  
                   145                                  150                                  155                                  160

atc gcg ccc ggc cgc aaa acc gac ccc ggc cac ttt ttc gac tgg cgg 528  
 Ile Ala Pro Gly Arg Lys Thr Asp Pro Gly His Phe Phe Asp Trp Arg  
                                   165                                  170                                  175

cgg ata cgg gag aaa ggg ttt ccc gta gac aga aat gcc gtc 570  
 Arg Ile Arg Glu Lys Gly Phe Pro Val Asp Arg Asn Ala Val  
                                   180                                  185                                  190

<210> 98

<211> 190

<212> PRT

<213> Neisseria meningitidis

<400> 98

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Met Asp Asn His Ala Glu Ala His Trp Gln Asn Gly Trp Leu Gln Ser
  1              5              10              15

Ile Arg His Thr Pro Ser Pro Asn Phe Ser Pro Arg Glu Thr Gly Glu
              20              25              30

Thr Val Ser Leu Ile Val Leu His Asn Ile Ser Leu Pro Pro Phe Glu
              35              40              45

Tyr Gly Thr Asp Ala Val Glu Lys Leu Phe Ala Asn Arg Leu Asp Pro
  50              55              60

Asn Gly His Pro Phe Phe Ser Leu Ile His Thr Leu Arg Val Ser Ser
  65              70              75              80

His Phe Leu Ile Lys Arg Asp Gly Lys Thr Val Gln Phe Val Ser Cys
              85              90              95

Gly Asp Met Ala Tyr His Ala Gly Val Ser Ser Phe Arg Gly Arg Glu
              100              105              110

Lys Cys Asn Ala Phe Ser Ile Gly Ile Glu Leu Glu Gly Cys Asp Phe
              115              120              125

Glu Pro Phe Thr Glu Ala Gln Tyr Arg Ser Leu Glu Thr Leu Leu Glu
              130              135              140

Ala Leu Cys Arg Arg Tyr Pro Val Thr Ala Val Thr Gly His Gln Asp
  145              150              155              160

Ile Ala Pro Gly Arg Lys Thr Asp Pro Gly His Phe Phe Asp Trp Arg
              165              170              175

Arg Ile Arg Glu Lys Gly Phe Pro Val Asp Arg Asn Ala Val
              180              185              190

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&lt;210&gt; 99

&lt;211&gt; 1515

&lt;212&gt; DNA

&lt;213&gt; Neisseria meningitidis

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(1515)

&lt;400&gt; 99

atg ttg tat ttc aga tac ggt ttt ttg gtt gtt tgg tgt gcg gca ggt	48
Met Leu Tyr Phe Arg Tyr Gly Phe Leu Val Val Trp Cys Ala Ala Gly	
1 5 10 15	
ggt tct gcc gcc tat ggg gcg gat gcg ccc gcg att ttg gat gac aag	96
Val Ser Ala Ala Tyr Gly Ala Asp Ala Pro Ala Ile Leu Asp Asp Lys	
20 25 30	
gca ttg ttg cag gtg cag cgg tcg gtg tcg gat aag tgg gcg gaa tcg	144
Ala Leu Leu Gln Val Gln Arg Ser Val Ser Asp Lys Trp Ala Glu Ser	
35 40 45	
gat tgg aaa gtt gac aat gat gcc ccg cgc gtg gtt gac ggg gat ttt	192
Asp Trp Lys Val Asp Asn Asp Ala Pro Arg Val Val Asp Gly Asp Phe	
50 55 60	
ttg ttg gcg cat ccg aaa atg ttg gaa cat agt ttg cgc gac gtg ctc	240
Leu Leu Ala His Pro Lys Met Leu Glu His Ser Leu Arg Asp Val Leu	
65 70 75 80	
aac ggc aat cag gcg gat ttg atc gct tcg ttg gcg gat ttg tat gcc	288
Asn Gly Asn Gln Ala Asp Leu Ile Ala Ser Leu Ala Asp Leu Tyr Ala	
85 90 95	
aag ctg ccg gat tat gac gcg gtt ttg tac ggc agg gcg cgg gct ttg	336
Lys Leu Pro Asp Tyr Asp Ala Val Leu Tyr Gly Arg Ala Arg Ala Leu	
100 105 110	
ctg gcg aaa ttg gcg gga agg ccg gcg gag gcg gtg gcg cgg tat cgg	384
Leu Ala Lys Leu Ala Gly Arg Pro Ala Glu Ala Val Ala Arg Tyr Arg	
115 120 125	
gaa ctg cac ggg gaa aat gcg gca gac gag cgg att ttg ctg gat ttg	432
Glu Leu His Gly Glu Asn Ala Ala Asp Glu Arg Ile Leu Leu Asp Leu	
130 135 140	
gcg gcg gcg gag ttt gac gat ttc ccg ctg aag tcg gca gaa agg cat	480
Ala Ala Ala Glu Phe Asp Asp Phe Arg Leu Lys Ser Ala Glu Arg His	
145 150 155 160	
ttt gcc gag gcg gaa aaa ttg gat ttg ccg gcg ccg gtt ttg gaa aat	528
Phe Ala Glu Ala Glu Lys Leu Asp Leu Pro Ala Pro Val Leu Glu Asn	
165 170 175	
gtg ggg cgt ttt cgg aaa aaa gcg gag ggg ctg acg ggc tgg cgt ttt	576
Val Gly Arg Phe Arg Lys Lys Ala Glu Gly Leu Thr Gly Trp Arg Phe	
180 185 190	

tcg ggc ggc atc agt ccg gcg gtc aat aga aat gcc aat aat gcc gcg	624
Ser Gly Gly Ile Ser Pro Ala Val Asn Arg Asn Ala Asn Asn Ala Ala	
195 200 205	
ccg cag tat tgc cgg caa aac gga ggc cgg cag ata tgc agt gtc agc	672
Pro Gln Tyr Cys Arg Gln Asn Gly Gly Arg Gln Ile Cys Ser Val Ser	
210 215 220	
cgg gcg gag cgg gcg gca ggc ttg aat tat gaa atc gag gcg gaa aaa	720
Arg Ala Glu Arg Ala Ala Gly Leu Asn Tyr Glu Ile Glu Ala Glu Lys	
225 230 235 240	
ctg acg gcg ttg gca gat aat cat tat ttg ttg ttc cgt tcc aat atc	768
Leu Thr Ala Leu Ala Asp Asn His Tyr Leu Leu Phe Arg Ser Asn Ile	
245 250 255	
ggc ggc acg agc tat tat ttc agt aaa aaa tca gct tat gac gac ggg	816
Gly Gly Thr Ser Tyr Tyr Phe Ser Lys Lys Ser Ala Tyr Asp Asp Gly	
260 265 270	
ttc ggc aga gcg tat ttg ggt tgg cag tat aaa aat gca cgg cag acg	864
Phe Gly Arg Ala Tyr Leu Gly Trp Gln Tyr Lys Asn Ala Arg Gln Thr	
275 280 285	
gcg ggg att ttg ccg ttt tat cag gtg cag ttg tcg ggc agc gac ggc	912
Ala Gly Ile Leu Pro Phe Tyr Gln Val Gln Leu Ser Gly Ser Asp Gly	
290 295 300	
ttt gat gcg aaa aca aaa ccg gta aac aac cgc cgc ctg ccg ccg tat	960
Phe Asp Ala Lys Thr Lys Arg Val Asn Asn Arg Arg Leu Pro Pro Tyr	
305 310 315 320	
atg ctg gcg cac gga gtc ggc gtg cag ttg tcc cat act tac cgc cca	1008
Met Leu Ala His Gly Val Gly Val Gln Leu Ser His Thr Tyr Arg Pro	
325 330 335	
aac ccg gga tgg caa ttt tcg gtc gcg ctg gaa cat tac cgc caa cgc	1056
Asn Pro Gly Trp Gln Phe Ser Val Ala Leu Glu His Tyr Arg Gln Arg	
340 345 350	
tac cgc gaa cag gat agg gcg gaa tac aat aac ggt cgg cag gac ggg	1104
Tyr Arg Glu Gln Asp Arg Ala Glu Tyr Asn Asn Gly Arg Gln Asp Gly	
355 360 365	
ttt tat gtt tcg tcg gca aaa cgt ttg ggc gaa tcg gca act gtg ttc	1152
Phe Tyr Val Ser Ser Ala Lys Arg Leu Gly Glu Ser Ala Thr Val Phe	
370 375 380	



ggc ggc tgg cag ttt gtg cgg ttt gtg ccg aaa cgc gaa acg gtg ggc 1200  
 Gly Gly Trp Gln Phe Val Arg Phe Val Pro Lys Arg Glu Thr Val Gly  
 385 390 395 400

ggc gcg gtc aat aat gcc gcc tac cgg cgc aac ggt gtt tat gcc ggc 1248  
 Gly Ala Val Asn Asn Ala Ala Tyr Arg Arg Asn Gly Val Tyr Ala Gly  
 405 410 415

tgg gcg cag gag tgg cgg cag ttg ggc ggt ttg aac agt cgg gtt tcc 1296  
 Trp Ala Gln Glu Trp Arg Gln Leu Gly Gly Leu Asn Ser Arg Val Ser  
 420 425 430

gcg tct tat gcc cgc cgc aac tat aag ggc gtt gcg gct ttc tcg aca 1344  
 Ala Ser Tyr Ala Arg Arg Asn Tyr Lys Gly Val Ala Ala Phe Ser Thr  
 435 440 445

gag gcg caa cgc aac cgc gaa tgg aat gtc tcg ctg gct ttg agc cac 1392  
 Glu Ala Gln Arg Asn Arg Glu Trp Asn Val Ser Leu Ala Leu Ser His  
 450 455 460

gac aag ttg tcg tac aaa ggt atc gtg ccc gcg ttg aat tat cgt ttc 1440  
 Asp Lys Leu Ser Tyr Lys Gly Ile Val Pro Ala Leu Asn Tyr Arg Phe  
 465 470 475 480

ggc agg acg gaa agt aat gtg ccg tat gcg aaa cgc cgc aac agc gag 1488  
 Gly Arg Thr Glu Ser Asn Val Pro Tyr Ala Lys Arg Arg Asn Ser Glu  
 485 490 495

gtg ttt gtg tcg gcg gat tgg cgg ttt 1515  
 Val Phe Val Ser Ala Asp Trp Arg Phe  
 500 505

<210> 100

<211> 505

<212> PRT

<213> *Neisseria meningitidis*

<400> 100

Met Leu Tyr Phe Arg Tyr Gly Phe Leu Val Val Trp Cys Ala Ala Gly  
 1 5 10 15

Val Ser Ala Ala Tyr Gly Ala Asp Ala Pro Ala Ile Leu Asp Asp Lys  
 20 25 30

Ala Leu Leu Gln Val Gln Arg Ser Val Ser Asp Lys Trp Ala Glu Ser  
 35 40 45

Asp Trp Lys Val Asp Asn Asp Ala Pro Arg Val Val Asp Gly Asp Phe  
 50 55 60

Leu Leu Ala His Pro Lys Met Leu Glu His Ser Leu Arg Asp Val Leu  
 65 70 75 80

Asn Gly Asn Gln Ala Asp Leu Ile Ala Ser Leu Ala Asp Leu Tyr Ala  
 85 90 95

Lys Leu Pro Asp Tyr Asp Ala Val Leu Tyr Gly Arg Ala Arg Ala Leu  
 100 105 110

Leu Ala Lys Leu Ala Gly Arg Pro Ala Glu Ala Val Ala Arg Tyr Arg  
 115 120 125

Glu Leu His Gly Glu Asn Ala Ala Asp Glu Arg Ile Leu Leu Asp Leu  
 130 135 140

Ala Ala Ala Glu Phe Asp Asp Phe Arg Leu Lys Ser Ala Glu Arg His  
 145 150 155 160

Phe Ala Glu Ala Glu Lys Leu Asp Leu Pro Ala Pro Val Leu Glu Asn  
 165 170 175

Val Gly Arg Phe Arg Lys Lys Ala Glu Gly Leu Thr Gly Trp Arg Phe  
 180 185 190

Ser Gly Gly Ile Ser Pro Ala Val Asn Arg Asn Ala Asn Asn Ala Ala  
 195 200 205

Pro Gln Tyr Cys Arg Gln Asn Gly Gly Arg Gln Ile Cys Ser Val Ser  
 210 215 220

Arg Ala Glu Arg Ala Ala Gly Leu Asn Tyr Glu Ile Glu Ala Glu Lys  
 225 230 235 240

Leu Thr Ala Leu Ala Asp Asn His Tyr Leu Leu Phe Arg Ser Asn Ile  
 245 250 255

Gly Gly Thr Ser Tyr Tyr Phe Ser Lys Lys Ser Ala Tyr Asp Asp Gly  
 260 265 270

Phe Gly Arg Ala Tyr Leu Gly Trp Gln Tyr Lys Asn Ala Arg Gln Thr  
 275 280 285

Ala Gly Ile Leu Pro Phe Tyr Gln Val Gln Leu Ser Gly Ser Asp Gly  
 290 295 300

Phe Asp Ala Lys Thr Lys Arg Val Asn Asn Arg Arg Leu Pro Pro Tyr  
 305 310 315 320  
 Met Leu Ala His Gly Val Gly Val Gln Leu Ser His Thr Tyr Arg Pro  
 325 330 335  
 Asn Pro Gly Trp Gln Phe Ser Val Ala Leu Glu His Tyr Arg Gln Arg  
 340 345 350  
 Tyr Arg Glu Gln Asp Arg Ala Glu Tyr Asn Asn Gly Arg Gln Asp Gly  
 355 360 365  
 Phe Tyr Val Ser Ser Ala Lys Arg Leu Gly Glu Ser Ala Thr Val Phe  
 370 375 380  
 Gly Gly Trp Gln Phe Val Arg Phe Val Pro Lys Arg Glu Thr Val Gly  
 385 390 395 400  
 Gly Ala Val Asn Asn Ala Ala Tyr Arg Arg Asn Gly Val Tyr Ala Gly  
 405 410 415  
 Trp Ala Gln Glu Trp Arg Gln Leu Gly Gly Leu Asn Ser Arg Val Ser  
 420 425 430  
 Ala Ser Tyr Ala Arg Arg Asn Tyr Lys Gly Val Ala Ala Phe Ser Thr  
 435 440 445  
 Glu Ala Gln Arg Asn Arg Glu Trp Asn Val Ser Leu Ala Leu Ser His  
 450 455 460  
 Asp Lys Leu Ser Tyr Lys Gly Ile Val Pro Ala Leu Asn Tyr Arg Phe  
 465 470 475 480  
 Gly Arg Thr Glu Ser Asn Val Pro Tyr Ala Lys Arg Arg Asn Ser Glu  
 485 490 495  
 Val Phe Val Ser Ala Asp Trp Arg Phe  
 500 505

&lt;210&gt; 101

&lt;211&gt; 1476

&lt;212&gt; DNA

&lt;213&gt; Neisseria meningitidis

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(1476)

&lt;400&gt; 101

atg aaa tac aaa gac ctg cgc gac ttc atc gcc atg ctc gag cag cag	48
Met Lys Tyr Lys Asp Leu Arg Asp Phe Ile Ala Met Leu Glu Gln Gln	
1 5 10 15	
ggc aaa ctc aaa cgc atc gcg cac ccc gtt tcc ccg cat ttg gaa atg	96
Gly Lys Leu Lys Arg Ile Ala His Pro Val Ser Pro His Leu Glu Met	
20 25 30	
acc gaa atc gcc gac cgc gtg ctg cgc gcc gaa ggg ccg gcg ttg ttg	144
Thr Glu Ile Ala Asp Arg Val Leu Arg Ala Glu Gly Pro Ala Leu Leu	
35 40 45	
ttt gaa cac cca gtt aag ccc gac ggt acg cgc tat gat tat ccc gtg	192
Phe Glu His Pro Val Lys Pro Asp Gly Thr Arg Tyr Asp Tyr Pro Val	
50 55 60	
ttg gca aac ctg ttc ggc acg ccc gaa cgt gtg gcg atg ggc atg ggc	240
Leu Ala Asn Leu Phe Gly Thr Pro Glu Arg Val Ala Met Gly Met Gly	
65 70 75 80	
gcg gac agc gtg tcc aag ctg cgc gaa atc ggg cag acg ctg gcg tat	288
Ala Asp Ser Val Ser Lys Leu Arg Glu Ile Gly Gln Thr Leu Ala Tyr	
85 90 95	
ttg aaa gaa ccc gaa ccg ccc aaa ggc att aaa gac gcg ttt tcc aaa	336
Leu Lys Glu Pro Glu Pro Pro Lys Gly Ile Lys Asp Ala Phe Ser Lys	
100 105 110	
ctg ccg ctc ttg aaa gac att tgg agc atg gcg ccg aac gtg gtg aaa	384
Leu Pro Leu Leu Lys Asp Ile Trp Ser Met Ala Pro Asn Val Val Lys	
115 120 125	
aat gcg ccg tgt cag gaa atc gta tgg gaa ggc gaa gac gtt gat ttg	432
Asn Ala Pro Cys Gln Glu Ile Val Trp Glu Gly Glu Asp Val Asp Leu	
130 135 140	
tat caa ctt ccg att cag cat tgc tgg ccg gaa gac gtt gcg ccg ctg	480
Tyr Gln Leu Pro Ile Gln His Cys Trp Pro Glu Asp Val Ala Pro Leu	
145 150 155 160	
gta acg tgg ggc ttg acc gtc acg cgc ggg ccg cac aaa aaa cgc caa	528
Val Thr Trp Gly Leu Thr Val Thr Arg Gly Pro His Lys Lys Arg Gln	
165 170 175	
aat ctc ggc att tac cgc caa caa tta atc ggc ata aac aag ctg att	576

Asn	Leu	Gly	Ile	Tyr	Arg	Gln	Gln	Leu	Ile	Gly	Ile	Asn	Lys	Leu	Ile		
			180						185				190				
atg	cgc	tgg	ctg	tcg	cat	cgc	ggc	ggc	gcg	ctg	gat	tat	cag	gaa	ttc	624	
Met	Arg	Trp	Leu	Ser	His	Arg	Gly	Gly	Ala	Leu	Asp	Tyr	Gln	Glu	Phe		
		195					200				205						
cgc	aaa	ctc	aat	ccc	gat	acg	ccg	tat	ccc	gtc	gcc	gtc	gtg	ctc	ggc	672	
Arg	Lys	Leu	Asn	Pro	Asp	Thr	Pro	Tyr	Pro	Val	Ala	Val	Val	Leu	Gly		
		210					215				220						
tgc	gac	cct	gcc	acc	att	ttg	ggc	gcg	gta	acg	ccc	gtt	ccc	gat	acc	720	
Cys	Asp	Pro	Ala	Thr	Ile	Leu	Gly	Ala	Val	Thr	Pro	Val	Pro	Asp	Thr		
225					230				235						240		
ttg	agc	gaa	tac	cag	ttt	gcc	gga	ctg	ctg	cgc	ggg	tcg	cgg	acg	gaa	768	
Leu	Ser	Glu	Tyr	Gln	Phe	Ala	Gly	Leu	Leu	Arg	Gly	Ser	Arg	Thr	Glu		
				245				250						255			
ctg	gtg	aaa	tgt	atc	ggc	aac	gat	ttg	caa	gtg	cct	gcc	cgc	gca	gaa	816	
Leu	Val	Lys	Cys	Ile	Gly	Asn	Asp	Leu	Gln	Val	Pro	Ala	Arg	Ala	Glu		
			260					265					270				
atc	gtg	ttg	gaa	ggc	gtc	atc	cat	cca	aac	gaa	acc	gcg	ttg	gaa	ggg	864	
Ile	Val	Leu	Glu	Gly	Val	Ile	His	Pro	Asn	Glu	Thr	Ala	Leu	Glu	Gly		
		275					280					285					
cca	tac	ggc	gac	cac	acg	ggc	tat	tac	aac	gag	cag	gac	cat	ttc	ccc	912	
Pro	Tyr	Gly	Asp	His	Thr	Gly	Tyr	Tyr	Asn	Glu	Gln	Asp	His	Phe	Pro		
		290					295				300						
gtg	ttt	acg	gtc	gaa	cgc	atc	acc	atg	cgc	gaa	aac	ccg	att	tac	cac	960	
Val	Phe	Thr	Val	Glu	Arg	Ile	Thr	Met	Arg	Glu	Asn	Pro	Ile	Tyr	His		
305					310				315					320			
tct	acc	tac	aca	ggc	aaa	ccg	ccc	gat	gaa	ccc	gcc	gtt	ttg	ggc	gtg	1008	
Ser	Thr	Tyr	Thr	Gly	Lys	Pro	Pro	Asp	Glu	Pro	Ala	Val	Leu	Gly	Val		
				325					330					335			
gcg	ttg	aac	gaa	gtg	ttc	gta	ccg	ctt	ttg	caa	aag	cag	ttc	ccc	gaa	1056	
Ala	Leu	Asn	Glu	Val	Phe	Val	Pro	Leu	Leu	Gln	Lys	Gln	Phe	Pro	Glu		
			340					345					350				
atc	acc	gat	ttt	tac	ctg	ccg	ccc	gaa	ggc	tgc	tcc	tac	cgc	atg	gcg	1104	
Ile	Thr	Asp	Phe	Tyr	Leu	Pro	Pro	Glu	Gly	Cys	Ser	Tyr	Arg	Met	Ala		
		355						360				365					
gtg	gtg	agc	atg	aaa	aaa	cag	tac	gcc	gga	cac	gcc	aag	cgc	gtg	atg	1152	

Val Val Ser Met Lys Lys Gln Tyr Ala Gly His Ala Lys Arg Val Met  
 370 375 380  
  
 atg ggc tgc tgg tcg ttc ctg cgc cag ttt atg tac acc aaa ttc atc 1200  
 Met Gly Cys Trp Ser Phe Leu Arg Gln Phe Met Tyr Thr Lys Phe Ile  
 385 390 395 400  
  
 att gtg gtg gat gac gat gtg gat gtg cgc gac tgg aaa gaa gtc atc 1248  
 Ile Val Val Asp Asp Asp Val Asp Val Arg Asp Trp Lys Glu Val Ile  
 405 410 415  
  
 tgg gcg gta acc acg cgc atg gac ccc gtg cgc gat acc gtt ttg atg 1296  
 Trp Ala Val Thr Thr Arg Met Asp Pro Val Arg Asp Thr Val Leu Met  
 420 425 430  
  
 gaa aac acg ccc atc gac tac ctc gac ttc gcc agc ccc gtc agc gga 1344  
 Glu Asn Thr Pro Ile Asp Tyr Leu Asp Phe Ala Ser Pro Val Ser Gly  
 435 440 445  
  
 ctt ggc ggc aaa atg ggt ttg gat gcg acc aac aag tgg ccg ggc gaa 1392  
 Leu Gly Gly Lys Met Gly Leu Asp Ala Thr Asn Lys Trp Pro Gly Glu  
 450 455 460  
  
 acc gac cgc gaa tgg gga cgg gtg att aaa aaa gac cct gcg gtt acg 1440  
 Thr Asp Arg Glu Trp Gly Arg Val Ile Lys Lys Asp Pro Ala Val Thr  
 465 470 475 480  
  
 gct aag att gat gag att tgg gag gaa ttg ggg ttg 1476  
 Ala Lys Ile Asp Glu Ile Trp Glu Glu Leu Gly Leu  
 485 490  
  
 <210> 102  
 <211> 492  
 <212> PRT  
 <213> Neisseria meningitidis  
  
 <400> 102  
 Met Lys Tyr Lys Asp Leu Arg Asp Phe Ile Ala Met Leu Glu Gln Gln  
 1 5 10 15  
  
 Gly Lys Leu Lys Arg Ile Ala His Pro Val Ser Pro His Leu Glu Met  
 20 25 30  
  
 Thr Glu Ile Ala Asp Arg Val Leu Arg Ala Glu Gly Pro Ala Leu Leu  
 35 40 45  
  
 Phe Glu His Pro Val Lys Pro Asp Gly Thr Arg Tyr Asp Tyr Pro Val

50	55	60
Leu Ala Asn Leu Phe Gly Thr Pro Glu Arg Val Ala Met Gly Met Gly		
65	70	75 80
Ala Asp Ser Val Ser Lys Leu Arg Glu Ile Gly Gln Thr Leu Ala Tyr		
	85	90 95
Leu Lys Glu Pro Glu Pro Pro Lys Gly Ile Lys Asp Ala Phe Ser Lys		
	100	105 110
Leu Pro Leu Leu Lys Asp Ile Trp Ser Met Ala Pro Asn Val Val Lys		
	115	120 125
Asn Ala Pro Cys Gln Glu Ile Val Trp Glu Gly Glu Asp Val Asp Leu		
	130	135 140
Tyr Gln Leu Pro Ile Gln His Cys Trp Pro Glu Asp Val Ala Pro Leu		
145	150	155 160
Val Thr Trp Gly Leu Thr Val Thr Arg Gly Pro His Lys Lys Arg Gln		
	165	170 175
Asn Leu Gly Ile Tyr Arg Gln Gln Leu Ile Gly Ile Asn Lys Leu Ile		
	180	185 190
Met Arg Trp Leu Ser His Arg Gly Gly Ala Leu Asp Tyr Gln Glu Phe		
	195	200 205
Arg Lys Leu Asn Pro Asp Thr Pro Tyr Pro Val Ala Val Val Leu Gly		
	210	215 220
Cys Asp Pro Ala Thr Ile Leu Gly Ala Val Thr Pro Val Pro Asp Thr		
225	230	235 240
Leu Ser Glu Tyr Gln Phe Ala Gly Leu Leu Arg Gly Ser Arg Thr Glu		
	245	250 255
Leu Val Lys Cys Ile Gly Asn Asp Leu Gln Val Pro Ala Arg Ala Glu		
	260	265 270
Ile Val Leu Glu Gly Val Ile His Pro Asn Glu Thr Ala Leu Glu Gly		
	275	280 285
Pro Tyr Gly Asp His Thr Gly Tyr Tyr Asn Glu Gln Asp His Phe Pro		
	290	295 300
Val Phe Thr Val Glu Arg Ile Thr Met Arg Glu Asn Pro Ile Tyr His		

305                      310                      315                      320  
 Ser Thr Tyr Thr Gly Lys Pro Pro Asp Glu Pro Ala Val Leu Gly Val  
                                  325                                   330                                   335  
 Ala Leu Asn Glu Val Phe Val Pro Leu Leu Gln Lys Gln Phe Pro Glu  
                                  340                                   345                                   350  
 Ile Thr Asp Phe Tyr Leu Pro Pro Glu Gly Cys Ser Tyr Arg Met Ala  
                                  355                                   360                                   365  
 Val Val Ser Met Lys Lys Gln Tyr Ala Gly His Ala Lys Arg Val Met  
                                  370                                   375                                   380  
 Met Gly Cys Trp Ser Phe Leu Arg Gln Phe Met Tyr Thr Lys Phe Ile  
 385                                   390                                   395                                   400  
 Ile Val Val Asp Asp Asp Val Asp Val Arg Asp Trp Lys Glu Val Ile  
                                  405                                   410                                   415  
 Trp Ala Val Thr Thr Arg Met Asp Pro Val Arg Asp Thr Val Leu Met  
                                  420                                   425                                   430  
 Glu Asn Thr Pro Ile Asp Tyr Leu Asp Phe Ala Ser Pro Val Ser Gly  
                                  435                                   440                                   445  
 Leu Gly Gly Lys Met Gly Leu Asp Ala Thr Asn Lys Trp Pro Gly Glu  
                                  450                                   455                                   460  
 Thr Asp Arg Glu Trp Gly Arg Val Ile Lys Lys Asp Pro Ala Val Thr  
 465                                   470                                   475                                   480  
 Ala Lys Ile Asp Glu Ile Trp Glu Glu Leu Gly Leu  
                                  485                                   490

&lt;210&gt; 103

&lt;211&gt; 1089

&lt;212&gt; DNA

&lt;213&gt; Neisseria meningitidis

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(1089)

&lt;400&gt; 103

atg agt ttg aaa tgc ggc atc gtc ggt ttg ccc aac gtc ggc aaa tcc 48



Met	Ser	Leu	Lys	Cys	Gly	Ile	Val	Gly	Leu	Pro	Asn	Val	Gly	Lys	Ser	
1				5					10					15		
acc	ctt	ttt	aac	gcg	ctg	acc	caa	tcg	ggc	atc	gaa	gcg	gca	aac	tat	96
Thr	Leu	Phe	Asn	Ala	Leu	Thr	Gln	Ser	Gly	Ile	Glu	Ala	Ala	Asn	Tyr	
			20					25					30			
cct	ttc	tgt	acc	atc	gaa	ccc	aac	gtc	ggc	atc	gtc	gaa	gtc	ccc	gat	144
Pro	Phe	Cys	Thr	Ile	Glu	Pro	Asn	Val	Gly	Ile	Val	Glu	Val	Pro	Asp	
			35				40					45				
ccg	cgt	atg	gcc	gaa	ttg	gca	aaa	atc	gtc	aat	ccg	caa	aaa	atg	cag	192
Pro	Arg	Met	Ala	Glu	Leu	Ala	Lys	Ile	Val	Asn	Pro	Gln	Lys	Met	Gln	
	50					55				60						
cct	gcc	atc	gtc	gaa	ttt	gtc	gat	att	gcc	ggc	ttg	gtt	gca	ggc	gcg	240
Pro	Ala	Ile	Val	Glu	Phe	Val	Asp	Ile	Ala	Gly	Leu	Val	Ala	Gly	Ala	
	65				70				75					80		
agc	aaa	ggc	gag	ggc	ttg	ggc	aac	cag	ttc	ctt	gcc	aac	atc	cgc	gaa	288
Ser	Lys	Gly	Glu	Gly	Leu	Gly	Asn	Gln	Phe	Leu	Ala	Asn	Ile	Arg	Glu	
				85				90					95			
acc	gat	gcg	att	gtg	aat	gtc	gtg	cgc	tgc	ttt	gac	gac	gac	aac	atc	336
Thr	Asp	Ala	Ile	Val	Asn	Val	Val	Arg	Cys	Phe	Asp	Asp	Asp	Asn	Ile	
			100					105					110			
gtc	cac	gtt	gca	ggc	cgc	gtc	gat	ccg	att	gcc	gac	att	gaa	acc	atc	384
Val	His	Val	Ala	Gly	Arg	Val	Asp	Pro	Ile	Ala	Asp	Ile	Glu	Thr	Ile	
			115				120					125				
ggc	aca	gag	ttg	gca	ctt	gcc	gac	ctg	gca	agt	gtc	gaa	aaa	gcc	atc	432
Gly	Thr	Glu	Leu	Ala	Leu	Ala	Asp	Leu	Ala	Ser	Val	Glu	Lys	Ala	Ile	
	130					135					140					
gtc	cgc	gaa	gaa	aaa	cgc	gcc	cgc	tca	ggc	gac	aaa	gac	gcg	caa	aag	480
Val	Arg	Glu	Glu	Lys	Arg	Ala	Arg	Ser	Gly	Asp	Lys	Asp	Ala	Gln	Lys	
	145				150				155					160		
ctg	gtc	gat	ttg	tgc	aaa	aaa	ctg	ctg	ccg	cat	ctg	gac	gaa	ggc	aaa	528
Leu	Val	Asp	Leu	Cys	Lys	Lys	Leu	Leu	Pro	His	Leu	Asp	Glu	Gly	Lys	
				165					170					175		
ccc	gtg	cgt	tcc	ttc	ggc	ttg	gac	gcg	gaa	gaa	cgc	gcg	atg	ctc	aaa	576
Pro	Val	Arg	Ser	Phe	Gly	Leu	Asp	Ala	Glu	Glu	Arg	Ala	Met	Leu	Lys	
			180					185					190			
ccg	ctg	ttc	ctg	ctg	acc	gcc	aaa	ccg	gcg	atg	tat	gtg	ggc	aac	gtc	624

Pro	Leu	Phe	Leu	Leu	Thr	Ala	Lys	Pro	Ala	Met	Tyr	Val	Gly	Asn	Val		
		195					200					205					
gcc	gaa	gac	ggt	ttt	gaa	aac	aat	ccg	cac	ctc	gac	cgc	ctg	aaa	gaa	672	
Ala	Glu	Asp	Gly	Phe	Glu	Asn	Asn	Pro	His	Leu	Asp	Arg	Leu	Lys	Glu		
	210					215				220							
ttg	gcg	gca	aaa	gaa	aac	gcc	ccc	gtc	gtc	gcc	gtt	tgc	gcc	gcg	atg	720	
Leu	Ala	Ala	Lys	Glu	Asn	Ala	Pro	Val	Val	Ala	Val	Cys	Ala	Ala	Met		
225					230					235					240		
gag	agc	gaa	att	gcc	gaa	ttg	gaa	gac	gac	gaa	aaa	gcc	gag	ttc	ctc	768	
Glu	Ser	Glu	Ile	Ala	Glu	Leu	Glu	Asp	Asp	Glu	Lys	Ala	Glu	Phe	Leu		
				245					250					255			
gcc	gaa	atg	ggc	ttg	gaa	gaa	ccg	ggc	ctg	aac	cgc	ctg	att	cgt	gcc	816	
Ala	Glu	Met	Gly	Leu	Glu	Glu	Pro	Gly	Leu	Asn	Arg	Leu	Ile	Arg	Ala		
			260					265					270				
ggt	tac	gac	ctc	ttg	ggg	ctg	caa	acc	tat	ttc	acc	gcc	ggt	gtg	aaa	864	
Gly	Tyr	Asp	Leu	Leu	Gly	Leu	Gln	Thr	Tyr	Phe	Thr	Ala	Gly	Val	Lys		
		275					280						285				
gaa	gtc	cgc	gcg	tgg	acg	ata	cac	aaa	ggc	gat	acc	gcc	ccg	caa	gcc	912	
Glu	Val	Arg	Ala	Trp	Thr	Ile	His	Lys	Gly	Asp	Thr	Ala	Pro	Gln	Ala		
	290					295					300						
gcc	ggc	gtg	att	cac	acc	gac	ttt	gag	cgc	ggc	ttc	atc	cgc	gcc	caa	960	
Ala	Gly	Val	Ile	His	Thr	Asp	Phe	Glu	Arg	Gly	Phe	Ile	Arg	Ala	Gln		
305					310					315					320		
gtc	att	tct	tac	gac	gac	ttt	gtc	tcg	ctc	ggc	ggc	gaa	gcc	aaa	gcc	1008	
Val	Ile	Ser	Tyr	Asp	Asp	Phe	Val	Ser	Leu	Gly	Gly	Glu	Ala	Lys	Ala		
				325					330					335			
aaa	gaa	gcc	ggc	aaa	atg	cgt	gtg	gaa	ggg	aag	gaa	tac	gtc	gtg	cag	1056	
Lys	Glu	Ala	Gly	Lys	Met	Arg	Val	Glu	Gly	Lys	Glu	Tyr	Val	Val	Gln		
			340					345					350				
gac	ggc	gat	gta	atg	cac	ttt	ttg	ttt	aac	gtg						1089	
Asp	Gly	Asp	Val	Met	His	Phe	Leu	Phe	Asn	Val							
		355					360										

&lt;210&gt; 104

&lt;211&gt; 363

&lt;212&gt; PRT

&lt;213&gt; Neisseria meningitidis

&lt;400&gt; 104

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Met Ser Leu Lys Cys Gly Ile Val Gly Leu Pro Asn Val Gly Lys Ser
  1              5              10              15

Thr Leu Phe Asn Ala Leu Thr Gln Ser Gly Ile Glu Ala Ala Asn Tyr
      20              25              30

Pro Phe Cys Thr Ile Glu Pro Asn Val Gly Ile Val Glu Val Pro Asp
      35              40              45

Pro Arg Met Ala Glu Leu Ala Lys Ile Val Asn Pro Gln Lys Met Gln
      50              55              60

Pro Ala Ile Val Glu Phe Val Asp Ile Ala Gly Leu Val Ala Gly Ala
      65              70              75              80

Ser Lys Gly Glu Gly Leu Gly Asn Gln Phe Leu Ala Asn Ile Arg Glu
      85              90              95

Thr Asp Ala Ile Val Asn Val Val Arg Cys Phe Asp Asp Asp Asn Ile
      100              105              110

Val His Val Ala Gly Arg Val Asp Pro Ile Ala Asp Ile Glu Thr Ile
      115              120              125

Gly Thr Glu Leu Ala Leu Ala Asp Leu Ala Ser Val Glu Lys Ala Ile
      130              135              140

Val Arg Glu Glu Lys Arg Ala Arg Ser Gly Asp Lys Asp Ala Gln Lys
      145              150              155              160

Leu Val Asp Leu Cys Lys Lys Leu Leu Pro His Leu Asp Glu Gly Lys
      165              170              175

Pro Val Arg Ser Phe Gly Leu Asp Ala Glu Glu Arg Ala Met Leu Lys
      180              185              190

Pro Leu Phe Leu Leu Thr Ala Lys Pro Ala Met Tyr Val Gly Asn Val
      195              200              205

Ala Glu Asp Gly Phe Glu Asn Asn Pro His Leu Asp Arg Leu Lys Glu
      210              215              220

Leu Ala Ala Lys Glu Asn Ala Pro Val Val Ala Val Cys Ala Ala Met
      225              230              235              240

Glu Ser Glu Ile Ala Glu Leu Glu Asp Asp Glu Lys Ala Glu Phe Leu

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	245		250		255
Ala Glu Met Gly Leu Glu Glu Pro Gly Leu Asn Arg Leu Ile Arg Ala					
	260		265		270
Gly Tyr Asp Leu Leu Gly Leu Gln Thr Tyr Phe Thr Ala Gly Val Lys					
	275		280		285
Glu Val Arg Ala Trp Thr Ile His Lys Gly Asp Thr Ala Pro Gln Ala					
	290		295		300
Ala Gly Val Ile His Thr Asp Phe Glu Arg Gly Phe Ile Arg Ala Gln					
305		310		315	320
Val Ile Ser Tyr Asp Asp Phe Val Ser Leu Gly Gly Glu Ala Lys Ala					
	325		330		335
Lys Glu Ala Gly Lys Met Arg Val Glu Gly Lys Glu Tyr Val Val Gln					
	340		345		350
Asp Gly Asp Val Met His Phe Leu Phe Asn Val					
	355		360		

&lt;210&gt; 105

&lt;211&gt; 1177

&lt;212&gt; DNA

&lt;213&gt; Neisseria meningitidis

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(1176)

&lt;400&gt; 105

atg gca aaa atg atg aaa tgg gcg gct gtt gcg gcg gtc gcg gcg gca	48
Met Ala Lys Met Met Lys Trp Ala Ala Val Ala Ala Val Ala Ala Ala	
1 5 10 15	

gcg gtt tgg ggc gga tgg tct tat ctg aag ccc gag ccg cag gct gct	96
Ala Val Trp Gly Gly Trp Ser Tyr Leu Lys Pro Glu Pro Gln Ala Ala	
20 25 30	

tat att acg gaa acg gtc agg cgc ggc gac atc agc cgg acg gtt tct	144
Tyr Ile Thr Glu Thr Val Arg Arg Gly Asp Ile Ser Arg Thr Val Ser	
35 40 45	

gca aca ggg gag att tcg ccg tcc aac ctg gta tcg gtc ggc gcg cag	192
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Ala Thr Gly Glu Ile Ser Pro Ser Asn Leu Val Ser Val Gly Ala Gln	
50 55 60	
gca tcg ggg cag att aag aaa ctt tat gtc aaa ctc ggg caa cag gtt	240
Ala Ser Gly Gln Ile Lys Lys Leu Tyr Val Lys Leu Gly Gln Gln Val	
65 70 75 80	
aaa aag ggc gat ttg att gcg gaa atc aat tcg acc tcg cag acc aat	288
Lys Lys Gly Asp Leu Ile Ala Glu Ile Asn Ser Thr Ser Gln Thr Asn	
85 90 95	
acg ctc aat acg gaa aaa tcc aaa ttg gaa acg tat cag gcg aag ctg	336
Thr Leu Asn Thr Glu Lys Ser Lys Leu Glu Thr Tyr Gln Ala Lys Leu	
100 105 110	
gtg tcg gca cag att gca ttg ggc agc gcg gag aag aaa tat aag cgt	384
Val Ser Ala Gln Ile Ala Leu Gly Ser Ala Glu Lys Lys Tyr Lys Arg	
115 120 125	
cag gcg gcg ttg tgg aag gat gat gcg acc gct aaa gaa gat ttg gaa	432
Gln Ala Ala Leu Trp Lys Asp Asp Ala Thr Ala Lys Glu Asp Leu Glu	
130 135 140	
agc gca cag gat gcg ctt gcc gcc gcc aaa gcc aat gtt gcc gag ctg	480
Ser Ala Gln Asp Ala Leu Ala Ala Ala Lys Ala Asn Val Ala Glu Leu	
145 150 155 160	
aag gct cta atc aga cag agc aaa att tcc atc aat acc gcc gag tcg	528
Lys Ala Leu Ile Arg Gln Ser Lys Ile Ser Ile Asn Thr Ala Glu Ser	
165 170 175	
gaa ttg ggc tac acg cgc att acc gca acg atg gac ggc acg gtg gtg	576
Glu Leu Gly Tyr Thr Arg Ile Thr Ala Thr Met Asp Gly Thr Val Val	
180 185 190	
gcg att ctc gtg gaa gag ggg cag act gtg aac gcg gcg cag tct acg	624
Ala Ile Leu Val Glu Glu Gly Gln Thr Val Asn Ala Ala Gln Ser Thr	
195 200 205	
ccg acg att gtc caa ttg gcg aat ctg gat atg atg ttg aac aaa atg	672
Pro Thr Ile Val Gln Leu Ala Asn Leu Asp Met Met Leu Asn Lys Met	
210 215 220	
cag att gcc gag ggc gat att acc aag gtg aag gcg ggg cag gat att	720
Gln Ile Ala Glu Gly Asp Ile Thr Lys Val Lys Ala Gly Gln Asp Ile	
225 230 235 240	
tcg ttt acg att ttg tcc gaa ccg gat acg ccg att aag gcg aag ctc	768

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Ser Phe Thr Ile Leu Ser Glu Pro Asp Thr Pro Ile Lys Ala Lys Leu
                245                      250                      255

gac agc gtc gac ccc ggg ctg acc acg atg tcg tcg ggc ggc tac aac      816
Asp Ser Val Asp Pro Gly Leu Thr Thr Met Ser Ser Gly Gly Tyr Asn
                260                      265                      270

agc agt acg gat acg gct tcc aat gcg gtc tac tat tat gcc cgt tcg      864
Ser Ser Thr Asp Thr Ala Ser Asn Ala Val Tyr Tyr Tyr Ala Arg Ser
                275                      280                      285

ttt gtg ccg aat ccg gac ggc aaa ctc gcc acg ggg atg acg acg cag      912
Phe Val Pro Asn Pro Asp Gly Lys Leu Ala Thr Gly Met Thr Thr Gln
                290                      295                      300

aat acg gtt gaa atc gac ggt gtg aaa aat gtg ctg att att ccg tcg      960
Asn Thr Val Glu Ile Asp Gly Val Lys Asn Val Leu Ile Ile Pro Ser
305                      310                      315                      320

ctg acc gtg aaa aat cgc ggc ggc agg gcg ttt gtg cgc gtg ttg ggt      1008
Leu Thr Val Lys Asn Arg Gly Gly Arg Ala Phe Val Arg Val Leu Gly
                325                      330                      335

gca gac ggc aag gcg gcg gaa cgc gaa atc cgg acc ggt atg aga gac      1056
Ala Asp Gly Lys Ala Ala Glu Arg Glu Ile Arg Thr Gly Met Arg Asp
                340                      345                      350

agt atg aat acc gaa gta aaa agc ggg ttg aaa gag ggg gac aaa gtg      1104
Ser Met Asn Thr Glu Val Lys Ser Gly Leu Lys Glu Gly Asp Lys Val
                355                      360                      365

gtc atc tcc gaa ata acc gcc gcc gag cag cag gaa agc ggc gaa cgc      1152
Val Ile Ser Glu Ile Thr Ala Ala Glu Gln Gln Glu Ser Gly Glu Arg
                370                      375                      380

gcc cta ggc ggc ccg ccg cgc cga t                                  1177
Ala Leu Gly Gly Pro Pro Arg Arg
385                      390

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&lt;210&gt; 106

&lt;211&gt; 392

&lt;212&gt; PRT

&lt;213&gt; Neisseria meningitidis

&lt;400&gt; 106

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Met Ala Lys Met Met Lys Trp Ala Ala Val Ala Ala Val Ala Ala Ala
  1                      5                      10                      15

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Ala Val Trp Gly Gly Trp Ser Tyr Leu Lys Pro Glu Pro Gln Ala Ala  
 20 25 30  
 Tyr Ile Thr Glu Thr Val Arg Arg Gly Asp Ile Ser Arg Thr Val Ser  
 35 40 45  
 Ala Thr Gly Glu Ile Ser Pro Ser Asn Leu Val Ser Val Gly Ala Gln  
 50 55 60  
 Ala Ser Gly Gln Ile Lys Lys Leu Tyr Val Lys Leu Gly Gln Gln Val  
 65 70 75 80  
 Lys Lys Gly Asp Leu Ile Ala Glu Ile Asn Ser Thr Ser Gln Thr Asn  
 85 90 95  
 Thr Leu Asn Thr Glu Lys Ser Lys Leu Glu Thr Tyr Gln Ala Lys Leu  
 100 105 110  
 Val Ser Ala Gln Ile Ala Leu Gly Ser Ala Glu Lys Lys Tyr Lys Arg  
 115 120 125  
 Gln Ala Ala Leu Trp Lys Asp Asp Ala Thr Ala Lys Glu Asp Leu Glu  
 130 135 140  
 Ser Ala Gln Asp Ala Leu Ala Ala Ala Lys Ala Asn Val Ala Glu Leu  
 145 150 155 160  
 Lys Ala Leu Ile Arg Gln Ser Lys Ile Ser Ile Asn Thr Ala Glu Ser  
 165 170 175  
 Glu Leu Gly Tyr Thr Arg Ile Thr Ala Thr Met Asp Gly Thr Val Val  
 180 185 190  
 Ala Ile Leu Val Glu Glu Gly Gln Thr Val Asn Ala Ala Gln Ser Thr  
 195 200 205  
 Pro Thr Ile Val Gln Leu Ala Asn Leu Asp Met Met Leu Asn Lys Met  
 210 215 220  
 Gln Ile Ala Glu Gly Asp Ile Thr Lys Val Lys Ala Gly Gln Asp Ile  
 225 230 235 240  
 Ser Phe Thr Ile Leu Ser Glu Pro Asp Thr Pro Ile Lys Ala Lys Leu  
 245 250 255  
 Asp Ser Val Asp Pro Gly Leu Thr Thr Met Ser Ser Gly Gly Tyr Asn  
 260 265 270

Ser Ser Thr Asp Thr Ala Ser Asn Ala Val Tyr Tyr Tyr Ala Arg Ser  
 275 280 285

Phe Val Pro Asn Pro Asp Gly Lys Leu Ala Thr Gly Met Thr Thr Gln  
 290 295 300

Asn Thr Val Glu Ile Asp Gly Val Lys Asn Val Leu Ile Ile Pro Ser  
 305 310 315 320

Leu Thr Val Lys Asn Arg Gly Gly Arg Ala Phe Val Arg Val Leu Gly  
 325 330 335

Ala Asp Gly Lys Ala Ala Glu Arg Glu Ile Arg Thr Gly Met Arg Asp  
 340 345 350

Ser Met Asn Thr Glu Val Lys Ser Gly Leu Lys Glu Gly Asp Lys Val  
 355 360 365

Val Ile Ser Glu Ile Thr Ala Ala Glu Gln Gln Glu Ser Gly Glu Arg  
 370 375 380

Ala Leu Gly Gly Pro Pro Arg Arg  
 385 390

<210> 107

<211> 1185

<212> DNA

<213> Neisseria meningitidis

<220>

<221> CDS

<222> (1)..(1185)

<400> 107

atg aca gag gac gaa cgt ttc gcg tgg ctg caa ttg gcg ttt acg ccc 48  
 Met Thr Glu Asp Glu Arg Phe Ala Trp Leu Gln Leu Ala Phe Thr Pro  
 1 5 10 15

tat atc ggc gcg gaa agt ttc ctg ctg ctg atg cgc cgt ttc ggc agc 96  
 Tyr Ile Gly Ala Glu Ser Phe Leu Leu Leu Met Arg Arg Phe Gly Ser  
 20 25 30

gcg caa aat gcc ctg tcc gca ccg gcg gaa cag gtg gcg gca ctg ata 144  
 Ala Gln Asn Ala Leu Ser Ala Pro Ala Glu Gln Val Ala Ala Leu Ile  
 35 40 45



cg	g	c	a	a	c	a	g	c	g	c	t	t	g	a	g	c	t	t	g	a	a	a	c	g	c	g	c	t		192								
Arg	His	Lys	Gln	Ala	Leu	Glu	Ala	Trp	Arg	Asn	Ala	Glu	Lys	Arg	Ala																							
		50						55							60																							
c	t	g	c	g	c	g	c	a	g	a	g	c	g	c	g	t	t	g	a	a	t	g	c	g	g	a	c		240									
Leu	Ala	Arg	Gln	Ala	Ala	Glu	Ala	Ala	Leu	Glu	Trp	Glu	Met	Arg	Asp																							
		65						70						75																								
g	g	a	t	g	c	c	t	g	a	t	g	c	t	t	c	a	g	a	t	t	c	c	c	a	a	t	g	c	t		288							
Gly	Cys	Arg	Leu	Met	Leu	Leu	Gln	Asp	Glu	Asp	Phe	Pro	Glu	Met	Leu																							
								85						90																								
a	c	g	c	a	g	g	c	c	t	g	a	c	c	g	c	c	g	g	t	t	t	t	t	t	c	g	c	g	a	a	c	g	t		336			
Thr	Gln	Gly	Leu	Thr	Ala	Pro	Pro	Val	Leu	Phe	Leu	Arg	Gly	Asn	Val																							
c	g	c	t	g	c	a	a	g	c	c	t	t	c	c	c	g	c	c	a	t	c	g	t	c	g	a	g	c	c	a	t	c	g	c		384		
Arg	Leu	Leu	His	Lys	Pro	Ser	Ala	Ala	Ile	Val	Gly	Ser	Arg	His	Ala																							
a	c	g	c	c	a	g	c	g	a	t	g	c	g	a	t	t	g	c	c	a	a	a	g	a	t	t	c	g	a	a	t	g	g	c		432		
Thr	Pro	Gln	Ala	Met	Arg	Ile	Ala	Lys	Asp	Phe	Gly	Lys	Ser	Leu	Gly																							
g	g	g	c	a	a	a	t	c	c	c	c	g	t	t	g	t	g	t	c	g	g	t	a	t	g	c	t	c	c	g	t	a	t	c		480		
Gly	Gln	Asn	Ile	Pro	Val	Val	Ser	Gly	Met	Ala	Ser	Gly	Ile	Asp	Thr																							
g	c	c	c	a	t	c	g	c	g	a	a	a	g	a	g	c	g	g	c	a	a	c	a	t	c	g	c	c	a	t	c	g	c	g	t		528	
Ala	Ala	His	Gln	Gly	Ala	Leu	Glu	Ala	Glu	Gly	Gly	Thr	Ile	Ala	Val																							
t	g	g	g	a	c	g	g	t	a	t	a	g	a	c	c	g	c	c	g	c	a	t	t	a	c	c	c	a	a	a	a	a	c	c	t		576	
Trp	Gly	Thr	Gly	Ile	Asp	Arg	Ile	Tyr	Pro	Pro	Ser	Asn	Lys	Asn	Leu																							
g	c	c	t	a	t	g	a	a	a	a	a	g	a	t	t	g	a	t	t	g	t	c	a	g	c	g	a	g	a	t	t	c	c	a	t		624	
Ala	Tyr	Glu	Ile	Ala	Glu	Lys	Gly	Leu	Ile	Val	Ser	Glu	Phe	Pro	Ile																							
g	g	t	a	c	g	c	c	g	t	a	t	g	c	c	a	a	t	t	t	c	c	g	c	c	g	c	a	a	c	c	g	c	t	g	a	t		672
Gly	Thr	Arg	Pro	Tyr	Ala	Gly	Asn	Phe	Pro	Arg	Arg	Asn	Arg	Leu	Ile																							
g	c	c	c	t	g	c	a	a	g	t	a	a	c	g	t	a	c	g	c	t	g	g	t	g	a	a	g	c	c	c	t	g	a	a	t		720	
Ala	Ala	Leu	Ser	Gln	Val	Thr	Leu	Val	Val	Glu	Ala	Ala	Leu	Glu	Ser																							

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ggt tcg ctg att acc gcc ggc ctg gcg gca gaa atg ggg cgc gaa gtg 768
Gly Ser Leu Ile Thr Ala Gly Leu Ala Ala Glu Met Gly Arg Glu Val
                245                250                255

atg gcg gta ccc ggt tcg ata gac aat ccg cac agc aaa ggc tgc cac 816
Met Ala Val Pro Gly Ser Ile Asp Asn Pro His Ser Lys Gly Cys His
                260                265                270

aaa ctg att aaa gac ggc gca aaa ttg gtg gaa tgc ctg gac gac atc 864
Lys Leu Ile Lys Asp Gly Ala Lys Leu Val Glu Cys Leu Asp Asp Ile
                275                280                285

ctg aac gaa tgc ccg ggg cta ttg caa aat acg ggt gct tca tca tat 912
Leu Asn Glu Cys Pro Gly Leu Leu Gln Asn Thr Gly Ala Ser Ser Tyr
                290                295                300

tct ata aat aag gat acg ccc gac acg gga cgc cgc gcc gtt cag acg 960
Ser Ile Asn Lys Asp Thr Pro Asp Thr Gly Arg Arg Ala Val Gln Thr
305                310                315                320

gca tac gcc ccg ccg cct gcc gca aaa atg ccg tct gaa gcg gcg gca 1008
Ala Tyr Ala Pro Pro Pro Ala Ala Lys Met Pro Ser Glu Ala Ala Ala
                325                330                335

ggc ggc aca gcc gtc ggc ggc ata ctg gat aaa atg ggt ttc gac ccc 1056
Gly Gly Thr Ala Val Gly Gly Ile Leu Asp Lys Met Gly Phe Asp Pro
                340                345                350

atc cat ccc gac gtg ctt gcc gga cag ttg gct atg cct gcc gca gat 1104
Ile His Pro Asp Val Leu Ala Gly Gln Leu Ala Met Pro Ala Ala Asp
                355                360                365

ttg tat gcc gca ctg ttg gaa ttg gaa ttg gac ggc agc gtt gcc gca 1152
Leu Tyr Ala Ala Leu Leu Glu Leu Glu Leu Asp Gly Ser Val Ala Ala
                370                375                380

atg ccc agc ggc aga tac cag cgt atc cga act 1185
Met Pro Ser Gly Arg Tyr Gln Arg Ile Arg Thr
385                390                395

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&lt;210&gt; 108

&lt;211&gt; 395

&lt;212&gt; PRT

&lt;213&gt; Neisseria meningitidis

&lt;400&gt; 108

Met	Thr	Glu	Asp	Glu	Arg	Phe	Ala	Trp	Leu	Gln	Leu	Ala	Phe	Thr	Pro	1	5	10	15
Tyr	Ile	Gly	Ala	Glu	Ser	Phe	Leu	Leu	Leu	Met	Arg	Arg	Phe	Gly	Ser	20	25	30	
Ala	Gln	Asn	Ala	Leu	Ser	Ala	Pro	Ala	Glu	Gln	Val	Ala	Ala	Leu	Ile	35	40	45	
Arg	His	Lys	Gln	Ala	Leu	Glu	Ala	Trp	Arg	Asn	Ala	Glu	Lys	Arg	Ala	50	55	60	
Leu	Ala	Arg	Gln	Ala	Ala	Glu	Ala	Ala	Leu	Glu	Trp	Glu	Met	Arg	Asp	65	70	75	80
Gly	Cys	Arg	Leu	Met	Leu	Leu	Gln	Asp	Glu	Asp	Phe	Pro	Glu	Met	Leu	85	90	95	
Thr	Gln	Gly	Leu	Thr	Ala	Pro	Pro	Val	Leu	Phe	Leu	Arg	Gly	Asn	Val	100	105	110	
Arg	Leu	Leu	His	Lys	Pro	Ser	Ala	Ala	Ile	Val	Gly	Ser	Arg	His	Ala	115	120	125	
Thr	Pro	Gln	Ala	Met	Arg	Ile	Ala	Lys	Asp	Phe	Gly	Lys	Ser	Leu	Gly	130	135	140	
Gly	Gln	Asn	Ile	Pro	Val	Val	Ser	Gly	Met	Ala	Ser	Gly	Ile	Asp	Thr	145	150	155	160
Ala	Ala	His	Gln	Gly	Ala	Leu	Glu	Ala	Glu	Gly	Gly	Thr	Ile	Ala	Val	165	170	175	
Trp	Gly	Thr	Gly	Ile	Asp	Arg	Ile	Tyr	Pro	Pro	Ser	Asn	Lys	Asn	Leu	180	185	190	
Ala	Tyr	Glu	Ile	Ala	Glu	Lys	Gly	Leu	Ile	Val	Ser	Glu	Phe	Pro	Ile	195	200	205	
Gly	Thr	Arg	Pro	Tyr	Ala	Gly	Asn	Phe	Pro	Arg	Arg	Asn	Arg	Leu	Ile	210	215	220	
Ala	Ala	Leu	Ser	Gln	Val	Thr	Leu	Val	Val	Glu	Ala	Ala	Leu	Glu	Ser	225	230	235	240
Gly	Ser	Leu	Ile	Thr	Ala	Gly	Leu	Ala	Ala	Glu	Met	Gly	Arg	Glu	Val	245	250	255	

Met Ala Val Pro Gly Ser Ile Asp Asn Pro His Ser Lys Gly Cys His  
 260 265 270

Lys Leu Ile Lys Asp Gly Ala Lys Leu Val Glu Cys Leu Asp Asp Ile  
 275 280 285

Leu Asn Glu Cys Pro Gly Leu Leu Gln Asn Thr Gly Ala Ser Ser Tyr  
 290 295 300

Ser Ile Asn Lys Asp Thr Pro Asp Thr Gly Arg Arg Ala Val Gln Thr  
 305 310 315 320

Ala Tyr Ala Pro Pro Pro Ala Ala Lys Met Pro Ser Glu Ala Ala Ala  
 325 330 335

Gly Gly Thr Ala Val Gly Gly Ile Leu Asp Lys Met Gly Phe Asp Pro  
 340 345 350

Ile His Pro Asp Val Leu Ala Gly Gln Leu Ala Met Pro Ala Ala Asp  
 355 360 365

Leu Tyr Ala Ala Leu Leu Glu Leu Glu Leu Asp Gly Ser Val Ala Ala  
 370 375 380

Met Pro Ser Gly Arg Tyr Gln Arg Ile Arg Thr  
 385 390 395

<210> 109

<211> 1257

<212> DNA

<213> Neisseria meningitidis

<220>

<221> CDS

<222> (1)..(1257)

<400> 109

atg aaa cag acc gtc ctc aaa aat aac ctg caa aac ctg ctt gaa agc 48  
 Met Lys Gln Thr Val Leu Lys Asn Asn Leu Gln Asn Leu Leu Glu Ser  
 1 5 10 15

gca gaa aat atc ctg ctg ctt caa ggc cct gtc ggc gat ttt ttt ctg 96  
 Ala Glu Asn Ile Leu Leu Leu Gln Gly Pro Val Gly Asp Phe Phe Leu  
 20 25 30

cgc ctt gcc gac tgg ctg act gca aac ggc aaa acc gta cat aaa ttc 144

Arg	Leu	Ala	Asp	Trp	Leu	Thr	Ala	Asn	Gly	Lys	Thr	Val	His	Lys	Phe	
		35					40					45				
aac	ttt	aat	gca	ggc	gac	gac	tat	ttt	tat	ccg	ccc	act	caa	gcg	cat	192
Asn	Phe	Asn	Ala	Gly	Asp	Asp	Tyr	Phe	Tyr	Pro	Pro	Thr	Gln	Ala	His	
	50					55				60						
acc	gtt	gtt	ttt	aac	gac	aac	tac	gat	gcc	ttt	cct	gag	ttt	ttg	caa	240
Thr	Val	Val	Phe	Asn	Asp	Asn	Tyr	Asp	Ala	Phe	Pro	Glu	Phe	Leu	Gln	
	65				70				75					80		
gaa	tac	atc	act	caa	cat	cac	atc	cag	gcc	gtt	gtc	tgc	ttt	ggc	gac	288
Glu	Tyr	Ile	Thr	Gln	His	His	Ile	Gln	Ala	Val	Val	Cys	Phe	Gly	Asp	
				85				90						95		
aca	cgc	cct	tat	cac	gtc	att	gca	aaa	cgc	att	gca	aac	gaa	aac	caa	336
Thr	Arg	Pro	Tyr	His	Val	Ile	Ala	Lys	Arg	Ile	Ala	Asn	Glu	Asn	Gln	
			100					105					110			
gcc	agt	ttc	tggt	gcg	ttt	gaa	gaa	ggc	tat	ttc	cgc	ccc	tac	tac	atc	384
Ala	Ser	Phe	Trp	Ala	Phe	Glu	Glu	Gly	Tyr	Phe	Arg	Pro	Tyr	Tyr	Ile	
	115					120					125					
acc	tta	gaa	aaa	gac	ggc	gtc	aac	gca	ttt	tcc	ccg	ttg	ccg	cgc	cgt	432
Thr	Leu	Glu	Lys	Asp	Gly	Val	Asn	Ala	Phe	Ser	Pro	Leu	Pro	Arg	Arg	
	130					135					140					
gcc	gac	ttt	ttt	ctt	gaa	caa	ttc	cct	aag	ctt	gcc	cag	caa	gaa	tat	480
Ala	Asp	Phe	Phe	Leu	Glu	Gln	Phe	Pro	Lys	Leu	Ala	Gln	Gln	Glu	Tyr	
	145				150					155				160		
aaa	gcg	cca	acg	ccg	gta	cac	ggc	ggt	ttt	acg	ccc	atg	gca	aaa	aac	528
Lys	Ala	Pro	Thr	Pro	Val	His	Gly	Gly	Phe	Thr	Pro	Met	Ala	Lys	Asn	
				165				170						175		
gct	atc	cgt	tac	tat	atc	gag	ttg	ttc	cgc	aat	cta	cgc	aaa	tac	ccc	576
Ala	Ile	Arg	Tyr	Tyr	Ile	Glu	Leu	Phe	Arg	Asn	Leu	Arg	Lys	Tyr	Pro	
			180					185					190			
gac	tac	atc	cac	cac	cgc	gca	ccc	aat	gcc	ggc	cat	tac	ctc	aaa	ccg	624
Asp	Tyr	Ile	His	His	Arg	Ala	Pro	Asn	Ala	Gly	His	Tyr	Leu	Lys	Pro	
		195				200					205					
tggt	tcg	ctc	tcc	atc	ctc	aag	cgt	ttg	aac	tac	tat	att	gaa	gac	atc	672
Trp	Ser	Leu	Ser	Ile	Leu	Lys	Arg	Leu	Asn	Tyr	Tyr	Ile	Glu	Asp	Ile	
	210					215				220						
caa	atc	gcc	aaa	cgt	gtg	gaa	gca	ggc	aaa	tac	ggc	aag	ttt	ttt	att	720

Gln Ile Ala Lys Arg Val Glu Ala Gly Lys Tyr Gly Lys Phe Phe Ile	
225	230 235 240
gtt ccc ttg cag gta ttc aac gac agc caa gtc cgt atc cat tgc gac	768
Val Pro Leu Gln Val Phe Asn Asp Ser Gln Val Arg Ile His Cys Asp	
245 250 255	
ttt ccc agc gtc cgc agc ttc ctg ctc cat gtt ttg agt tca ttt gcc	816
Phe Pro Ser Val Arg Ser Phe Leu Leu His Val Leu Ser Ser Phe Ala	
260 265 270	
gaa cac gcg cct gcc gat acc aac atc atc atc aag cat cat cct atg	864
Glu His Ala Pro Ala Asp Thr Asn Ile Ile Ile Lys His His Pro Met	
275 280 285	
gac cgc ggc ttt atc gac tac tgg cgc gac att aaa cgc ttt atc aaa	912
Asp Arg Gly Phe Ile Asp Tyr Trp Arg Asp Ile Lys Arg Phe Ile Lys	
290 295 300	
gaa cac ccc gaa ctc aaa ggc cgt gtg att tat gtc cat gat gtc ccc	960
Glu His Pro Glu Leu Lys Gly Arg Val Ile Tyr Val His Asp Val Pro	
305 310 315 320	
ctg ccc gtt ttc ctg cgc cac ggt ctc ggc atg gtt acc atc aac agc	1008
Leu Pro Val Phe Leu Arg His Gly Leu Gly Met Val Thr Ile Asn Ser	
325 330 335	
acc agc ggc ctg tcc gga ctg att cac aat atg cca gtt aag gtt ctc	1056
Thr Ser Gly Leu Ser Gly Leu Ile His Asn Met Pro Val Lys Val Leu	
340 345 350	
ggc cgt gcc tat tat gat att ccc ggc att act gac caa aat acc ttg	1104
Gly Arg Ala Tyr Tyr Asp Ile Pro Gly Ile Thr Asp Gln Asn Thr Leu	
355 360 365	
gca gaa ttt tgg aat cat ccg aca ccg cct gac aaa gag ctg ttc cat	1152
Ala Glu Phe Trp Asn His Pro Thr Pro Pro Asp Lys Glu Leu Phe His	
370 375 380	
gcc tac cga atg tac cac ctc aac gtg acc caa att aac ggc aac ttc	1200
Ala Tyr Arg Met Tyr His Leu Asn Val Thr Gln Ile Asn Gly Asn Phe	
385 390 395 400	
tac agt cag gtc ttt ttt cct aac aaa aac aca tcc gac tct tcc aca	1248
Tyr Ser Gln Val Phe Phe Pro Asn Lys Asn Thr Ser Asp Ser Ser Thr	
405 410 415	
cca aca acc	1257

Pro Thr Thr

&lt;210&gt; 110

&lt;211&gt; 419

&lt;212&gt; PRT

&lt;213&gt; Neisseria meningitidis

&lt;400&gt; 110

Met Lys Gln Thr Val Leu Lys Asn Asn Leu Gln Asn Leu Leu Glu Ser  
 1 5 10 15

Ala Glu Asn Ile Leu Leu Leu Gln Gly Pro Val Gly Asp Phe Phe Leu  
 20 25 30

Arg Leu Ala Asp Trp Leu Thr Ala Asn Gly Lys Thr Val His Lys Phe  
 35 40 45

Asn Phe Asn Ala Gly Asp Asp Tyr Phe Tyr Pro Pro Thr Gln Ala His  
 50 55 60

Thr Val Val Phe Asn Asp Asn Tyr Asp Ala Phe Pro Glu Phe Leu Gln  
 65 70 75 80

Glu Tyr Ile Thr Gln His His Ile Gln Ala Val Val Cys Phe Gly Asp  
 85 90 95

Thr Arg Pro Tyr His Val Ile Ala Lys Arg Ile Ala Asn Glu Asn Gln  
 100 105 110

Ala Ser Phe Trp Ala Phe Glu Glu Gly Tyr Phe Arg Pro Tyr Tyr Ile  
 115 120 125

Thr Leu Glu Lys Asp Gly Val Asn Ala Phe Ser Pro Leu Pro Arg Arg  
 130 135 140

Ala Asp Phe Phe Leu Glu Gln Phe Pro Lys Leu Ala Gln Gln Glu Tyr  
 145 150 155 160

Lys Ala Pro Thr Pro Val His Gly Gly Phe Thr Pro Met Ala Lys Asn  
 165 170 175

Ala Ile Arg Tyr Tyr Ile Glu Leu Phe Arg Asn Leu Arg Lys Tyr Pro  
 180 185 190

Asp Tyr Ile His His Arg Ala Pro Asn Ala Gly His Tyr Leu Lys Pro  
 195 200 205

Trp Ser Leu Ser Ile Leu Lys Arg Leu Asn Tyr Tyr Ile Glu Asp Ile  
 210 215 220  
 Gln Ile Ala Lys Arg Val Glu Ala Gly Lys Tyr Gly Lys Phe Phe Ile  
 225 230 235 240  
 Val Pro Leu Gln Val Phe Asn Asp Ser Gln Val Arg Ile His Cys Asp  
 245 250 255  
 Phe Pro Ser Val Arg Ser Phe Leu Leu His Val Leu Ser Ser Phe Ala  
 260 265 270  
 Glu His Ala Pro Ala Asp Thr Asn Ile Ile Ile Lys His His Pro Met  
 275 280 285  
 Asp Arg Gly Phe Ile Asp Tyr Trp Arg Asp Ile Lys Arg Phe Ile Lys  
 290 295 300  
 Glu His Pro Glu Leu Lys Gly Arg Val Ile Tyr Val His Asp Val Pro  
 305 310 315 320  
 Leu Pro Val Phe Leu Arg His Gly Leu Gly Met Val Thr Ile Asn Ser  
 325 330 335  
 Thr Ser Gly Leu Ser Gly Leu Ile His Asn Met Pro Val Lys Val Leu  
 340 345 350  
 Gly Arg Ala Tyr Tyr Asp Ile Pro Gly Ile Thr Asp Gln Asn Thr Leu  
 355 360 365  
 Ala Glu Phe Trp Asn His Pro Thr Pro Pro Asp Lys Glu Leu Phe His  
 370 375 380  
 Ala Tyr Arg Met Tyr His Leu Asn Val Thr Gln Ile Asn Gly Asn Phe  
 385 390 395 400  
 Tyr Ser Gln Val Phe Phe Pro Asn Lys Asn Thr Ser Asp Ser Ser Thr  
 405 410 415  
 Pro Thr Thr

&lt;210&gt; 111

&lt;211&gt; 1674

&lt;212&gt; DNA

&lt;213&gt; Neisseria meningitidis



&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(1674)

&lt;400&gt; 111

atg agt ttc aaa acc gat gcc gaa atc gcc caa tcc tcc acc atg cgc	48
Met Ser Phe Lys Thr Asp Ala Glu Ile Ala Gln Ser Ser Thr Met Arg	
1 5 10 15	
ccg att ggc gaa att gcc gcc aag ctg ggt ttg aac gtt gac aac att	96
Pro Ile Gly Glu Ile Ala Ala Lys Leu Gly Leu Asn Val Asp Asn Ile	
20 25 30	
gag cct tac ggt cat tac aaa gcc aaa atc aat cct gcc gaa gcg ttc	144
Glu Pro Tyr Gly His Tyr Lys Ala Lys Ile Asn Pro Ala Glu Ala Phe	
35 40 45	
aaa ctg ccg caa aaa cag ggc agg ctg att ttg gtt acc gcc atc aac	192
Lys Leu Pro Gln Lys Gln Gly Arg Leu Ile Leu Val Thr Ala Ile Asn	
50 55 60	
ccg act ccg gcg ggc gaa ggt aaa acc acc gta acc atc ggt ttg gcg	240
Pro Thr Pro Ala Gly Glu Gly Lys Thr Thr Val Thr Ile Gly Leu Ala	
65 70 75 80	
gac gca ttg cgc cat atc ggc aaa gac tct gtg att gct ttg cgc gag	288
Asp Ala Leu Arg His Ile Gly Lys Asp Ser Val Ile Ala Leu Arg Glu	
85 90 95	
cct tct ttg ggt ccg gtg ttc ggc gtg aaa ggc ggc gcg gca ggc ggc	336
Pro Ser Leu Gly Pro Val Phe Gly Val Lys Gly Gly Ala Ala Gly Gly	
100 105 110	
ggc tat gcc caa gtt ttg ccg atg gaa gac atc aac ctg cac ttc acc	384
Gly Tyr Ala Gln Val Leu Pro Met Glu Asp Ile Asn Leu His Phe Thr	
115 120 125	
gga gat ttt cac gcc atc ggt gcg gca aat aat ctg ctt gcc gcg atg	432
Gly Asp Phe His Ala Ile Gly Ala Ala Asn Asn Leu Leu Ala Ala Met	
130 135 140	
ctc gac aac cat atc tac caa ggc aac gag ttg aac atc gac ccc aaa	480
Ile Asp Asn His Ile Tyr Gln Gly Asn Glu Leu Asn Ile Asp Pro Lys	
145 150 155 160	
cgc gtg ctg tgg cgg cgc gtg gtc gat atg aac gac cgc cag ttg cgc	528
Arg Val Leu Trp Arg Arg Val Val Asp Met Asn Asp Arg Gln Leu Arg	

	165	170	175	
aac atc atc gac ggc atg ggc aag cct gtt gac ggc gtg atg cgt cct				576
Asn Ile Ile Asp Gly Met Gly Lys Pro Val Asp Gly Val Met Arg Pro				
	180	185	190	
gac ggt ttc gat att acc gtt gct tcc gaa gtg atg gcg gta ttc tgt				624
Asp Gly Phe Asp Ile Thr Val Ala Ser Glu Val Met Ala Val Phe Cys				
	195	200	205	
ctt gcc aaa gac atc agc gat ttg aaa gag cgt ttg ggc aac atc ctt				672
Leu Ala Lys Asp Ile Ser Asp Leu Lys Glu Arg Leu Gly Asn Ile Leu				
	210	215	220	
gtc gcc tac gcc aaa gac ggc agc ccc gtt tac gcc aaa gat ttg aaa				720
Val Ala Tyr Ala Lys Asp Gly Ser Pro Val Tyr Ala Lys Asp Leu Lys				
	225	230	235	240
gcg aat ggc gcg atg gcg gca ttg ctt aaa gat gcg att aag ccc aac				768
Ala Asn Gly Ala Met Ala Ala Leu Leu Lys Asp Ala Ile Lys Pro Asn				
	245	250	255	
ttg gtg caa acc atc gaa ggc acg ccc gcc ttc gta cac ggc ggc ccg				816
Leu Val Gln Thr Ile Glu Gly Thr Pro Ala Phe Val His Gly Gly Pro				
	260	265	270	
ttc gcc aac atc gcc cac ggc tgc aac tcc gta acc gca acc cgt ctg				864
Phe Ala Asn Ile Ala His Gly Cys Asn Ser Val Thr Ala Thr Arg Leu				
	275	280	285	
gcg aaa cac ctt gcc gat tac gcc gta acc gaa gca ggc ttc ggc gcg				912
Ala Lys His Leu Ala Asp Tyr Ala Val Thr Glu Ala Gly Phe Gly Ala				
	290	295	300	
gac ttg ggc gcg gaa aaa ttc tgc gac atc aaa tgc cgc ctt gcc ggt				960
Asp Leu Gly Ala Glu Lys Phe Cys Asp Ile Lys Cys Arg Leu Ala Gly				
	305	310	315	320
ttg aaa cct gat gcg gct gtt gtc gtg gcg act gtc cgc gcg ttg aaa				1008
Leu Lys Pro Asp Ala Ala Val Val Val Ala Thr Val Arg Ala Leu Lys				
	325	330	335	
tat aac ggc ggc gtg gaa cgc gcc aac ctc ggc gaa gaa aat tta gac				1056
Tyr Asn Gly Gly Val Glu Arg Ala Asn Ile Gly Glu Glu Asn Leu Asp				
	340	345	350	
gct ttg gaa aaa ggt ttg ccc aac ctg ctg aaa cac att tcc aac ctg				1104
Ala Leu Glu Lys Gly Leu Pro Asn Leu Leu Lys His Ile Ser Asn Leu				

355	360	365	
aaa aac gta ttc gga ctg ccc gtc gtc gtt gcg ctc aac cgc ttc gtg			1152
Lys Asn Val Phe Gly Leu Pro Val Val Val Ala Leu Asn Arg Phe Val			
370	375	380	
tcc gac tcc gat gcc gag ttg gcg atg att gaa aaa gcc tgt gcc gaa			1200
Ser Asp Ser Asp Ala Glu Leu Ala Met Ile Glu Lys Ala Cys Ala Glu			
385	390	395	400
cac ggc gtt gaa gtt tcc ctg acc gaa gtg tgg ggc aaa ggt ggt gcg			1248
His Gly Val Glu Val Ser Leu Thr Glu Val Trp Gly Lys Gly Gly Ala			
	405	410	415
ggc ggc gcg gat ttg gcg cgc aaa gtc gtc aac gcc att gaa agt caa			1296
Gly Gly Ala Asp Leu Ala Arg Lys Val Val Asn Ala Ile Glu Ser Gln			
	420	425	430
acc aat aac ttc ggt ttc gcc tac gat gtc gag ttg ggc atc aaa gac			1344
Thr Asn Asn Phe Gly Phe Ala Tyr Asp Val Glu Leu Gly Ile Lys Asp			
	435	440	445
aaa atc cgt gcg att gcc caa aaa gtg tac ggc gcg gaa gat gtt gat			1392
Lys Ile Arg Ala Ile Ala Gln Lys Val Tyr Gly Ala Glu Asp Val Asp			
	450	455	460
ttc agc gcg gaa gcg tct gcc gaa atc gct tca ctg gaa aaa ctg ggc			1440
Phe Ser Ala Glu Ala Ser Ala Glu Ile Ala Ser Leu Glu Lys Leu Gly			
465	470	475	480
ttg gac aaa atg ccg atc tgc atg gcg aaa acc caa tac tct ttg agc			1488
Leu Asp Lys Met Pro Ile Cys Met Ala Lys Thr Gln Tyr Ser Leu Ser			
	485	490	495
gac aac gcc aaa ctg ttg ggc tgc ccc gaa gac ttc cgc atc gcc gtg			1536
Asp Asn Ala Lys Leu Leu Gly Cys Pro Glu Asp Phe Arg Ile Ala Val			
	500	505	510
cgc ggc atc acc gtt tcc gca ggc gca ggt ttc atc gtc gcc ctg tgc			1584
Arg Gly Ile Thr Val Ser Ala Gly Ala Gly Phe Ile Val Ala Leu Cys			
	515	520	525
ggc aac atg atg aaa atg ccc ggc ctg ccc aaa gtt ccg gct gcc gag			1632
Gly Asn Met Met Lys Met Pro Gly Leu Pro Lys Val Pro Ala Ala Glu			
	530	535	540
aaa atc gat gtg gac gca gaa ggc gtg att cac ggc ttg ttc			1674
Lys Ile Asp Val Asp Ala Glu Gly Val Ile His Gly Leu Phe			

545

550

555

&lt;210&gt; 112

&lt;211&gt; 558

&lt;212&gt; PRT

&lt;213&gt; Neisseria meningitidis

&lt;400&gt; 112

Met Ser Phe Lys Thr Asp Ala Glu Ile Ala Gln Ser Ser Thr Met Arg  
 1 5 10 15

Pro Ile Gly Glu Ile Ala Ala Lys Leu Gly Leu Asn Val Asp Asn Ile  
 20 25 30

Glu Pro Tyr Gly His Tyr Lys Ala Lys Ile Asn Pro Ala Glu Ala Phe  
 35 40 45

Lys Leu Pro Gln Lys Gln Gly Arg Leu Ile Leu Val Thr Ala Ile Asn  
 50 55 60

Pro Thr Pro Ala Gly Glu Gly Lys Thr Thr Val Thr Ile Gly Leu Ala  
 65 70 75 80

Asp Ala Leu Arg His Ile Gly Lys Asp Ser Val Ile Ala Leu Arg Glu  
 85 90 95

Pro Ser Leu Gly Pro Val Phe Gly Val Lys Gly Gly Ala Ala Gly Gly  
 100 105 110

Gly Tyr Ala Gln Val Leu Pro Met Glu Asp Ile Asn Leu His Phe Thr  
 115 120 125

Gly Asp Phe His Ala Ile Gly Ala Ala Asn Asn Leu Leu Ala Ala Met  
 130 135 140

Leu Asp Asn His Ile Tyr Gln Gly Asn Glu Leu Asn Ile Asp Pro Lys  
 145 150 155 160

Arg Val Leu Trp Arg Arg Val Val Asp Met Asn Asp Arg Gln Leu Arg  
 165 170 175

Asn Ile Ile Asp Gly Met Gly Lys Pro Val Asp Gly Val Met Arg Pro  
 180 185 190

Asp Gly Phe Asp Ile Thr Val Ala Ser Glu Val Met Ala Val Phe Cys  
 195 200 205

Leu Ala Lys Asp Ile Ser Asp Leu Lys Glu Arg Leu Gly Asn Ile Leu  
 210 215 220

Val Ala Tyr Ala Lys Asp Gly Ser Pro Val Tyr Ala Lys Asp Leu Lys  
 225 230 235 240

Ala Asn Gly Ala Met Ala Ala Leu Leu Lys Asp Ala Ile Lys Pro Asn  
 245 250 255

Leu Val Gln Thr Ile Glu Gly Thr Pro Ala Phe Val His Gly Gly Pro  
 260 265 270

Phe Ala Asn Ile Ala His Gly Cys Asn Ser Val Thr Ala Thr Arg Leu  
 275 280 285

Ala Lys His Leu Ala Asp Tyr Ala Val Thr Glu Ala Gly Phe Gly Ala  
 290 295 300

Asp Leu Gly Ala Glu Lys Phe Cys Asp Ile Lys Cys Arg Leu Ala Gly  
 305 310 315 320

Leu Lys Pro Asp Ala Ala Val Val Val Ala Thr Val Arg Ala Leu Lys  
 325 330 335

Tyr Asn Gly Gly Val Glu Arg Ala Asn Leu Gly Glu Glu Asn Leu Asp  
 340 345 350

Ala Leu Glu Lys Gly Leu Pro Asn Leu Leu Lys His Ile Ser Asn Leu  
 355 360 365

Lys Asn Val Phe Gly Leu Pro Val Val Val Ala Leu Asn Arg Phe Val  
 370 375 380

Ser Asp Ser Asp Ala Glu Leu Ala Met Ile Glu Lys Ala Cys Ala Glu  
 385 390 395 400

His Gly Val Glu Val Ser Leu Thr Glu Val Trp Gly Lys Gly Gly Ala  
 405 410 415

Gly Gly Ala Asp Leu Ala Arg Lys Val Val Asn Ala Ile Glu Ser Gln  
 420 425 430

Thr Asn Asn Phe Gly Phe Ala Tyr Asp Val Glu Leu Gly Ile Lys Asp  
 435 440 445

Lys Ile Arg Ala Ile Ala Gln Lys Val Tyr Gly Ala Glu Asp Val Asp  
 450 455 460

Phe Ser Ala Glu Ala Ser Ala Glu Ile Ala Ser Leu Glu Lys Leu Gly  
465 470 475 480

Leu Asp Lys Met Pro Ile Cys Met Ala Lys Thr Gln Tyr Ser Leu Ser  
485 490 495

Asp Asn Ala Lys Leu Leu Gly Cys Pro Glu Asp Phe Arg Ile Ala Val  
500 505 510

Arg Gly Ile Thr Val Ser Ala Gly Ala Gly Phe Ile Val Ala Leu Cys  
515 520 525

Gly Asn Met Met Lys Met Pro Gly Leu Pro Lys Val Pro Ala Ala Glu  
530 535 540

Lys Ile Asp Val Asp Ala Glu Gly Val Ile His Gly Leu Phe  
545 550 555

<210> 113

<211> 475

<212> DNA

<213> Neisseria meningitidis

<220>

<221> CDS

<222> (1)..(474)

<400> 113

atg gaa cac cta ttt gag gaa tgg ttg ccc gac ctg ccc gcc gac gtt 48  
Met Glu His Leu Phe Glu Glu Trp Leu Pro Asp Leu Pro Ala Asp Val  
1 5 10 15

tca gac ggc atc ggc ctg ccg atg agc cgg tta ttg aaa gcc cgg tcg 96  
Ser Asp Gly Ile Gly Leu Pro Met Ser Arg Leu Leu Lys Ala Arg Ser  
20 25 30

ctg act gcc gca ttg cgc gcc ttg ccg cat ctg ttt tcg gta gaa ctg 144  
Leu Thr Ala Ala Leu Arg Ala Leu Pro His Leu Phe Ser Val Glu Leu  
35 40 45

ctg aaa ctg ggc gaa ttg gaa acg gaa tgc gga ggg cgg ctg gtg cgc 192  
Leu Lys Leu Gly Glu Leu Glu Thr Glu Cys Gly Gly Arg Leu Val Arg  
50 55 60

gaa gtt ttg ttg aag ctg gac ggt atc cct gtt gtc gcg gca agg agc 240  
Glu Val Leu Leu Lys Leu Asp Gly Ile Pro Val Val Ala Ala Arg Ser

65	70	75	80	
gaa tgc cgt atc ggt tgc gcg ttt tgg caa aac att ttg gac tgc ggc				288
Glu Cys Arg Ile Gly Ser Ala Phe Trp Gln Asn Ile Leu Asp Cys Gly				
	85	90	95	
acg cgt cct ttg ggc gaa cgt ctg ttt caa gcc gat ttg gaa ggg gcg				336
Thr Arg Pro Leu Gly Glu Arg Leu Phe Gln Ala Asp Leu Glu Gly Ala				
	100	105	110	
cgt tgc gcg ttt gag ttt gcc gtt ttc ggc gaa gga tgc gga cgg tac				384
Arg Ser Ala Phe Glu Phe Ala Val Phe Gly Glu Gly Cys Gly Arg Tyr				
	115	120	125	
ttt gcc gct cgg cgt tgc cgg ttt tcc cat cac ggc gag gaa atg ctg				432
Phe Ala Ala Arg Arg Ser Arg Phe Ser His His Gly Glu Glu Met Leu				
	130	135	140	
ctg acc gag tat ttt ctg ccc gaa ctg aaa cgc ttt atc gga t				475
Leu Thr Glu Tyr Phe Leu Pro Glu Leu Lys Arg Phe Ile Gly				
145	150	155		
 <210> 114				
<211> 158				
<212> PRT				
<213> Neisseria meningitidis				
 <400> 114				
Met Glu His Leu Phe Glu Glu Trp Leu Pro Asp Leu Pro Ala Asp Val				
1	5	10	15	
Ser Asp Gly Ile Gly Leu Pro Met Ser Arg Leu Leu Lys Ala Arg Ser				
	20	25	30	
Leu Thr Ala Ala Leu Arg Ala Leu Pro His Leu Phe Ser Val Glu Leu				
	35	40	45	
Leu Lys Leu Gly Glu Leu Glu Thr Glu Cys Gly Gly Arg Leu Val Arg				
	50	55	60	
Glu Val Leu Leu Lys Leu Asp Gly Ile Pro Val Val Ala Ala Arg Ser				
65	70	75	80	
Glu Cys Arg Ile Gly Ser Ala Phe Trp Gln Asn Ile Leu Asp Cys Gly				
	85	90	95	
Thr Arg Pro Leu Gly Glu Arg Leu Phe Gln Ala Asp Leu Glu Gly Ala				

100	105	110
Arg Ser Ala Phe Glu Phe Ala Val Phe Gly Glu Gly Cys Gly Arg Tyr		
115	120	125
Phe Ala Ala Arg Arg Ser Arg Phe Ser His His Gly Glu Glu Met Leu		
130	135	140
Leu Thr Glu Tyr Phe Leu Pro Glu Leu Lys Arg Phe Ile Gly		
145	150	155

&lt;210&gt; 115

&lt;211&gt; 1476

&lt;212&gt; DNA

&lt;213&gt; Neisseria meningitidis

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(1476)

&lt;400&gt; 115

atg aaa tac aaa gac ctg cgc gac ttc atc gcc atg ctc gag cag cag	48
Met Lys Tyr Lys Asp Leu Arg Asp Phe Ile Ala Met Leu Glu Gln Gln	
1 5 10 15	
ggc aaa ctc aaa cgc atc gcg cac ccc gtt tcc ccg cat ttg gaa atg	96
Gly Lys Leu Lys Arg Ile Ala His Pro Val Ser Pro His Leu Glu Met	
20 25 30	
acc gaa atc gcc gac cgc gtg ctg cgc gcc gaa ggg ccg gcg ttg ttg	144
Thr Glu Ile Ala Asp Arg Val Leu Arg Ala Glu Gly Pro Ala Leu Leu	
35 40 45	
ttt gaa cac cca gtt aag ccc gac ggt acg cgc tat gat tat ccc gtg	192
Phe Glu His Pro Val Lys Pro Asp Gly Thr Arg Tyr Asp Tyr Pro Val	
50 55 60	
ttg gca aac ctg ttc ggc acg ccc gaa cgt gtg gcg atg ggc atg ggc	240
Leu Ala Asn Leu Phe Gly Thr Pro Glu Arg Val Ala Met Gly Met Gly	
65 70 75 80	
gcg gac agc gtg tcc aag ctg cgc gaa atc ggg cag acg ctg gcg tat	288
Ala Asp Ser Val Ser Lys Leu Arg Glu Ile Gly Gln Thr Leu Ala Tyr	
85 90 95	
ttg aaa gaa ccc gaa ccg ccc aaa ggc att aaa gac gcg ttt tcc aaa	336



Leu	Lys	Glu	Pro	Glu	Pro	Pro	Lys	Gly	Ile	Lys	Asp	Ala	Phe	Ser	Lys		
			100					105					110				
ctg	ccg	ctc	ttg	aaa	gac	att	tgg	agc	atg	gcg	ccg	aac	gtg	gtg	aaa	384	
Leu	Pro	Leu	Leu	Lys	Asp	Ile	Trp	Ser	Met	Ala	Pro	Asn	Val	Val	Lys		
		115					120					125					
aat	gcg	ccg	tgt	cag	gaa	atc	gta	tgg	gaa	ggc	gaa	gac	gtt	gat	ttg	432	
Asn	Ala	Pro	Cys	Gln	Glu	Ile	Val	Trp	Glu	Gly	Glu	Asp	Val	Asp	Leu		
		130				135					140						
tat	caa	ctt	ccg	att	cag	cat	tgc	tgg	ccg	gaa	gac	gtt	gcg	ccg	ctg	480	
Tyr	Gln	Leu	Pro	Ile	Gln	His	Cys	Trp	Pro	Glu	Asp	Val	Ala	Pro	Leu		
145					150					155					160		
gta	acg	tgg	ggc	ttg	acc	gtc	acg	cgc	ggg	ccg	cac	aaa	aaa	cgc	caa	528	
Val	Thr	Trp	Gly	Leu	Thr	Val	Thr	Arg	Gly	Pro	His	Lys	Lys	Arg	Gln		
				165					170					175			
aat	ctc	ggc	att	tac	cgc	caa	caa	tta	atc	ggc	ata	aac	aag	ctg	att	576	
Asn	Leu	Gly	Ile	Tyr	Arg	Gln	Gln	Leu	Ile	Gly	Ile	Asn	Lys	Leu	Ile		
			180					185					190				
atg	cgc	tgg	ctg	tgc	cat	cgc	ggc	ggc	gcg	ctg	gat	tat	cag	gaa	ttc	624	
Met	Arg	Trp	Leu	Ser	His	Arg	Gly	Gly	Ala	Leu	Asp	Tyr	Gln	Glu	Phe		
		195					200					205					
cgc	aaa	ctc	aat	ccc	gat	acg	ccg	tat	ccc	gtc	gcc	gtc	gtg	ctc	ggc	672	
Arg	Lys	Leu	Asn	Pro	Asp	Thr	Pro	Tyr	Pro	Val	Ala	Val	Val	Leu	Gly		
		210				215					220						
tgc	gac	cct	gcc	acc	att	ttg	ggc	gcg	gta	acg	ccc	gtt	ccc	gat	acc	720	
Cys	Asp	Pro	Ala	Thr	Ile	Leu	Gly	Ala	Val	Thr	Pro	Val	Pro	Asp	Thr		
225					230				235					240			
ttg	agc	gaa	tac	cag	ttt	gcc	gga	ctg	ctg	cgc	ggt	tcg	cgg	acg	gaa	768	
Leu	Ser	Glu	Tyr	Gln	Phe	Ala	Gly	Leu	Leu	Arg	Gly	Ser	Arg	Thr	Glu		
				245				250						255			
ctg	gtg	aaa	tgt	atc	ggc	aac	gat	ttg	caa	gtg	cct	gcc	cgc	gca	gaa	816	
Leu	Val	Lys	Cys	Ile	Gly	Asn	Asp	Leu	Gln	Val	Pro	Ala	Arg	Ala	Glu		
			260					265				270					
atc	gtg	ttg	gaa	ggc	gtc	atc	cat	cca	aac	gaa	acc	gcg	ttg	gaa	ggt	864	
Ile	Val	Leu	Glu	Gly	Val	Ile	His	Pro	Asn	Glu	Thr	Ala	Leu	Glu	Gly		
		275					280					285					
cca	tac	ggc	gac	cac	acg	ggc	tat	tac	aac	gag	cag	gac	cat	ttc	ccc	912	

Pro	Tyr	Gly	Asp	His	Thr	Gly	Tyr	Tyr	Asn	Glu	Gln	Asp	His	Phe	Pro	
290						295					300					
gtg	ttt	acg	gtc	gaa	cgc	atc	acc	atg	cgc	gaa	aac	ccg	att	tac	cac	960
Val	Phe	Thr	Val	Glu	Arg	Ile	Thr	Met	Arg	Glu	Asn	Pro	Ile	Tyr	His	
305					310					315					320	
tct	acc	tac	aca	ggc	aaa	ccg	ccc	gat	gaa	ccc	gcc	gtt	ttg	ggc	gtg	1008
Ser	Thr	Tyr	Thr	Gly	Lys	Pro	Pro	Asp	Glu	Pro	Ala	Val	Leu	Gly	Val	
				325					330					335		
gcg	ttg	aac	gaa	gtg	ttc	gta	ccg	ctt	ttg	caa	aag	cag	ttc	ccc	gaa	1056
Ala	Leu	Asn	Glu	Val	Phe	Val	Pro	Leu	Leu	Gln	Lys	Gln	Phe	Pro	Glu	
			340					345					350			
atc	acc	gat	ttt	tac	ctg	ccg	ccc	gaa	ggc	tgc	tcc	tac	cgc	atg	gcg	1104
Ile	Thr	Asp	Phe	Tyr	Leu	Pro	Pro	Glu	Gly	Cys	Ser	Tyr	Arg	Met	Ala	
		355					360					365				
gtg	gtg	agc	atg	aaa	aaa	cag	tac	gcc	gga	cac	gcc	aag	cgc	gtg	atg	1152
Val	Val	Ser	Met	Lys	Lys	Gln	Tyr	Ala	Gly	His	Ala	Lys	Arg	Val	Met	
	370					375					380					
atg	ggc	tgc	tgg	tgc	ttc	ctg	cgc	cag	ttt	atg	tac	acc	aaa	ttc	atc	1200
Met	Gly	Cys	Trp	Ser	Phe	Leu	Arg	Gln	Phe	Met	Tyr	Thr	Lys	Phe	Ile	
385					390					395					400	
att	gtg	gtg	gat	gac	gat	gtg	gat	gtg	cgc	gac	tgg	aaa	gaa	gtc	atc	1248
Ile	Val	Val	Asp	Asp	Asp	Val	Asp	Val	Arg	Asp	Trp	Lys	Glu	Val	Ile	
				405					410					415		
tgg	gcg	gta	acc	acg	cgc	atg	gac	ccc	gtg	cgc	gat	acc	gtt	ttg	atg	1296
Trp	Ala	Val	Thr	Thr	Arg	Met	Asp	Pro	Val	Arg	Asp	Thr	Val	Leu	Met	
			420					425					430			
gaa	aac	acg	ccc	atc	gac	tac	ctc	gac	ttc	gcc	agc	ccc	gtc	agc	gga	1344
Glu	Asn	Thr	Pro	Ile	Asp	Tyr	Leu	Asp	Phe	Ala	Ser	Pro	Val	Ser	Gly	
		435					440					445				
ctt	ggc	ggc	aaa	atg	ggt	ttg	gat	gcg	acc	aac	aag	tgg	ccg	ggc	gaa	1392
Leu	Gly	Gly	Lys	Met	Gly	Leu	Asp	Ala	Thr	Asn	Lys	Trp	Pro	Gly	Glu	
	450					455					460					
acc	gac	cgc	gaa	tgg	gga	cgg	gtg	att	aaa	aaa	gac	cct	gcg	gtt	acg	1440
Thr	Asp	Arg	Glu	Trp	Gly	Arg	Val	Ile	Lys	Lys	Asp	Pro	Ala	Val	Thr	
465					470					475					480	
gct	aag	att	gat	gag	att	tgg	gag	gaa	ttg	ggg	ttg					1476

Ala Lys Ile Asp Glu Ile Trp Glu Glu Leu Gly Leu  
                             485                            490

<210> 116

<211> 492

<212> PRT

<213> Neisseria meningitidis

<400> 116

Met Lys Tyr Lys Asp Leu Arg Asp Phe Ile Ala Met Leu Glu Gln Gln  
   1                            5                            10                            15

Gly Lys Leu Lys Arg Ile Ala His Pro Val Ser Pro His Leu Glu Met  
                             20                            25                            30

Thr Glu Ile Ala Asp Arg Val Leu Arg Ala Glu Gly Pro Ala Leu Leu  
                             35                            40                            45

Phe Glu His Pro Val Lys Pro Asp Gly Thr Arg Tyr Asp Tyr Pro Val  
                             50                            55                            60

Leu Ala Asn Leu Phe Gly Thr Pro Glu Arg Val Ala Met Gly Met Gly  
   65                            70                            75                            80

Ala Asp Ser Val Ser Lys Leu Arg Glu Ile Gly Gln Thr Leu Ala Tyr  
                             85                            90                            95

Leu Lys Glu Pro Glu Pro Pro Lys Gly Ile Lys Asp Ala Phe Ser Lys  
                             100                            105                            110

Leu Pro Leu Leu Lys Asp Ile Trp Ser Met Ala Pro Asn Val Val Lys  
                             115                            120                            125

Asn Ala Pro Cys Gln Glu Ile Val Trp Glu Gly Glu Asp Val Asp Leu  
                             130                            135                            140

Tyr Gln Leu Pro Ile Gln His Cys Trp Pro Glu Asp Val Ala Pro Leu  
   145                            150                            155                            160

Val Thr Trp Gly Leu Thr Val Thr Arg Gly Pro His Lys Lys Arg Gln  
                             165                            170                            175

Asn Leu Gly Ile Tyr Arg Gln Gln Leu Ile Gly Ile Asn Lys Leu Ile  
                             180                            185                            190

Met Arg Trp Leu Ser His Arg Gly Gly Ala Leu Asp Tyr Gln Glu Phe  
                             195                            200                            205

Arg Lys Leu Asn Pro Asp Thr Pro Tyr Pro Val Ala Val Val Leu Gly  
 210 215 220  
 Cys Asp Pro Ala Thr Ile Leu Gly Ala Val Thr Pro Val Pro Asp Thr  
 225 230 235 240  
 Leu Ser Glu Tyr Gln Phe Ala Gly Leu Leu Arg Gly Ser Arg Thr Glu  
 245 250 255  
 Leu Val Lys Cys Ile Gly Asn Asp Leu Gln Val Pro Ala Arg Ala Glu  
 260 265 270  
 Ile Val Leu Glu Gly Val Ile His Pro Asn Glu Thr Ala Leu Glu Gly  
 275 280 285  
 Pro Tyr Gly Asp His Thr Gly Tyr Tyr Asn Glu Gln Asp His Phe Pro  
 290 295 300  
 Val Phe Thr Val Glu Arg Ile Thr Met Arg Glu Asn Pro Ile Tyr His  
 305 310 315 320  
 Ser Thr Tyr Thr Gly Lys Pro Pro Asp Glu Pro Ala Val Leu Gly Val  
 325 330 335  
 Ala Leu Asn Glu Val Phe Val Pro Leu Leu Gln Lys Gln Phe Pro Glu  
 340 345 350  
 Ile Thr Asp Phe Tyr Leu Pro Pro Glu Gly Cys Ser Tyr Arg Met Ala  
 355 360 365  
 Val Val Ser Met Lys Lys Gln Tyr Ala Gly His Ala Lys Arg Val Met  
 370 375 380  
 Met Gly Cys Trp Ser Phe Leu Arg Gln Phe Met Tyr Thr Lys Phe Ile  
 385 390 395 400  
 Ile Val Val Asp Asp Asp Val Asp Val Arg Asp Trp Lys Glu Val Ile  
 405 410 415  
 Trp Ala Val Thr Thr Arg Met Asp Pro Val Arg Asp Thr Val Leu Met  
 420 425 430  
 Glu Asn Thr Pro Ile Asp Tyr Leu Asp Phe Ala Ser Pro Val Ser Gly  
 435 440 445  
 Leu Gly Gly Lys Met Gly Leu Asp Ala Thr Asn Lys Trp Pro Gly Glu  
 450 455 460

Thr Asp Arg Glu Trp Gly Arg Val Ile Lys Lys Asp Pro Ala Val Thr  
 465 470 475 480

Ala Lys Ile Asp Glu Ile Trp Glu Glu Leu Gly Leu  
 485 490

<210> 117

<211> 1515

<212> DNA

<213> *Neisseria meningitidis*

<220>

<221> CDS

<222> (1)..(1515)

<400> 117

atg ttg tat ttc aga tac ggt ttt ttg gtt gtt tgg tgt gcg gca ggt 48  
 Met Leu Tyr Phe Arg Tyr Gly Phe Leu Val Val Trp Cys Ala Ala Gly  
 1 5 10 15

gtt tct gcc gcc tat ggg gcg gat gcg ccc gcg att ttg gat gac aag 96  
 Val Ser Ala Ala Tyr Gly Ala Asp Ala Pro Ala Ile Leu Asp Asp Lys  
 20 25 30

gca ttg ttg cag gtg cag cgg tcg gtg tcg gat aag tgg gcg gaa tcg 144  
 Ala Leu Leu Gln Val Gln Arg Ser Val Ser Asp Lys Trp Ala Glu Ser  
 35 40 45

gat tgg aaa gtt gac aat gat gcc ccg cgc gtg gtt gac ggg gat ttt 192  
 Asp Trp Lys Val Asp Asn Asp Ala Pro Arg Val Val Asp Gly Asp Phe  
 50 55 60

ttg ttg gcg cat ccg aaa atg ttg gaa cat agt ttg cgc gac gtg ctc 240  
 Leu Leu Ala His Pro Lys Met Leu Glu His Ser Leu Arg Asp Val Leu  
 65 70 75 80

aac ggc aat cag gcg gat ttg atc gct tcg ttg gcg gat ttg tat gcc 288  
 Asn Gly Asn Gln Ala Asp Leu Ile Ala Ser Leu Ala Asp Leu Tyr Ala  
 85 90 95

aag ctg ccg gat tat gac gcg gtt ttg tac ggc agg gcg cgg gct ttg 336  
 Lys Leu Pro Asp Tyr Asp Ala Val Leu Tyr Gly Arg Ala Arg Ala Leu  
 100 105 110

ctg gcg aaa ttg gcg gga agg ccg gcg gag gcg gtg gcg cgg tat cgg 384

Leu	Ala	Lys	Leu	Ala	Gly	Arg	Pro	Ala	Glu	Ala	Val	Ala	Arg	Tyr	Arg		
		115					120					125					
gaa	ctg	cac	ggg	gaa	aat	gcg	gca	gac	gag	cgg	att	ttg	ctg	gat	ttg	432	
Glu	Leu	His	Gly	Glu	Asn	Ala	Ala	Asp	Glu	Arg	Ile	Leu	Leu	Asp	Leu		
		130				135					140						
gcg	gcg	gcg	gag	ttt	gac	gat	ttc	cgg	ctg	aag	tcg	gca	gaa	agg	cat	480	
Ala	Ala	Ala	Glu	Phe	Asp	Asp	Phe	Arg	Leu	Lys	Ser	Ala	Glu	Arg	His		
145					150					155				160			
ttt	gcc	gag	gcg	gaa	aaa	ttg	gat	ttg	ccg	gcg	ccg	gtt	ttg	gaa	aat	528	
Phe	Ala	Glu	Ala	Glu	Lys	Leu	Asp	Leu	Pro	Ala	Pro	Val	Leu	Glu	Asn		
				165					170					175			
gtg	ggg	cgt	ttt	cgg	aaa	aaa	gcg	gag	ggg	ctg	acg	ggc	tgg	cgt	ttt	576	
Val	Gly	Arg	Phe	Arg	Lys	Lys	Ala	Glu	Gly	Leu	Thr	Gly	Trp	Arg	Phe		
			180					185					190				
tcg	ggc	ggc	atc	agt	ccg	gcg	gtc	aat	aga	aat	gcc	aat	aat	gcc	gcg	624	
Ser	Gly	Gly	Ile	Ser	Pro	Ala	Val	Asn	Arg	Asn	Ala	Asn	Asn	Ala	Ala		
		195					200					205					
ccg	cag	tat	tgc	cgg	caa	aac	gga	ggc	cgg	cag	ata	tgc	agt	gtc	agc	672	
Pro	Gln	Tyr	Cys	Arg	Gln	Asn	Gly	Gly	Arg	Gln	Ile	Cys	Ser	Val	Ser		
		210				215					220						
cgg	gcg	gag	cgg	gcg	gca	ggc	ttg	aat	tat	gaa	atc	gag	gcg	gaa	aaa	720	
Arg	Ala	Glu	Arg	Ala	Ala	Gly	Leu	Asn	Tyr	Glu	Ile	Glu	Ala	Glu	Lys		
225					230					235				240			
ctg	acg	gcg	ttg	gca	gat	aat	cat	tat	ttg	ttg	ttc	cgt	tcc	aat	atc	768	
Leu	Thr	Ala	Leu	Ala	Asp	Asn	His	Tyr	Leu	Leu	Phe	Arg	Ser	Asn	Ile		
				245					250					255			
ggc	ggc	acg	agc	tat	tat	ttc	agt	aaa	aaa	tca	gct	tat	gac	gac	ggg	816	
Gly	Gly	Thr	Ser	Tyr	Tyr	Phe	Ser	Lys	Lys	Ser	Ala	Tyr	Asp	Asp	Gly		
			260					265					270				
ttc	ggc	aga	gcg	tat	ttg	ggt	tgg	cag	tat	aaa	aat	gca	cgg	cag	acg	864	
Phe	Gly	Arg	Ala	Tyr	Leu	Gly	Trp	Gln	Tyr	Lys	Asn	Ala	Arg	Gln	Thr		
		275					280					285					
gcg	ggg	att	ttg	ccg	ttt	tat	cag	gtg	cag	ttg	tcg	ggc	agc	gac	ggc	912	
Ala	Gly	Ile	Leu	Pro	Phe	Tyr	Gln	Val	Gln	Leu	Ser	Gly	Ser	Asp	Gly		
		290				295					300						
ttt	gat	gcg	aaa	aca	aaa	cgg	gta	aac	aac	cgc	cgc	ctg	ccg	ccg	tat	960	

Phe	Asp	Ala	Lys	Thr	Lys	Arg	Val	Asn	Asn	Arg	Arg	Leu	Pro	Pro	Tyr	
305					310					315					320	
atg	ctg	gcg	cac	gga	gtc	ggc	gtg	cag	ttg	tcc	cat	act	tac	cgc	cca	1008
Met	Leu	Ala	His	Gly	Val	Gly	Val	Gln	Leu	Ser	His	Thr	Tyr	Arg	Pro	
				325					330					335		
aac	ccg	gga	tgg	caa	ttt	tcg	gtc	gcg	ctg	gaa	cat	tac	cgc	caa	cgc	1056
Asn	Pro	Gly	Trp	Gln	Phe	Ser	Val	Ala	Leu	Glu	His	Tyr	Arg	Gln	Arg	
				340				345					350			
tac	cgc	gaa	cag	gat	agg	gcg	gaa	tac	aat	aac	ggg	cgg	cag	gac	ggg	1104
Tyr	Arg	Glu	Gln	Asp	Arg	Ala	Glu	Tyr	Asn	Asn	Gly	Arg	Gln	Asp	Gly	
				355				360				365				
ttt	tat	gtt	tcg	tcg	gca	aaa	cgt	ttg	ggc	gaa	tcg	gca	act	gtg	ttc	1152
Phe	Tyr	Val	Ser	Ser	Ala	Lys	Arg	Leu	Gly	Glu	Ser	Ala	Thr	Val	Phe	
						370		375				380				
ggc	ggc	tgg	cag	ttt	gtg	cgg	ttt	gtg	ccg	aaa	cgc	gaa	acg	gtg	ggc	1200
Gly	Gly	Trp	Gln	Phe	Val	Arg	Phe	Val	Pro	Lys	Arg	Glu	Thr	Val	Gly	
385					390				395						400	
ggc	gcg	gtc	aat	aat	gcc	gcc	tac	cgg	cgc	aac	ggg	gtt	tat	gcc	ggc	1248
Gly	Ala	Val	Asn	Asn	Ala	Ala	Tyr	Arg	Arg	Asn	Gly	Val	Tyr	Ala	Gly	
				405					410					415		
tgg	gcg	cag	gag	tgg	cgg	cag	ttg	ggc	ggg	ttg	aac	agt	cgg	gtt	tcc	1296
Trp	Ala	Gln	Glu	Trp	Arg	Gln	Leu	Gly	Gly	Leu	Asn	Ser	Arg	Val	Ser	
				420				425					430			
gcg	tct	tat	gcc	cgc	cgc	aac	tat	aag	ggc	gtt	gcg	gct	ttc	tcg	aca	1344
Ala	Ser	Tyr	Ala	Arg	Arg	Asn	Tyr	Lys	Gly	Val	Ala	Ala	Phe	Ser	Thr	
				435				440				445				
gag	gcg	caa	cgc	aac	cgc	gaa	tgg	aat	gtc	tcg	ctg	gct	ttg	agc	cac	1392
Glu	Ala	Gln	Arg	Asn	Arg	Glu	Trp	Asn	Val	Ser	Leu	Ala	Leu	Ser	His	
				450			455				460					
gac	aag	ttg	tcg	tac	aaa	ggg	atc	gtg	ccc	gcg	ttg	aat	tat	cgt	ttc	1440
Asp	Lys	Leu	Ser	Tyr	Lys	Gly	Ile	Val	Pro	Ala	Leu	Asn	Tyr	Arg	Phe	
465					470				475					480		
ggc	agg	acg	gaa	agt	aat	gtg	ccg	tat	gcg	aaa	cgc	cgc	aac	agc	gag	1488
Gly	Arg	Thr	Glu	Ser	Asn	Val	Pro	Tyr	Ala	Lys	Arg	Arg	Asn	Ser	Glu	
				485					490					495		
gtg	ttt	gtg	tcg	gcg	gat	tgg	cgg	ttt								1515

Val Phe Val Ser Ala Asp Trp Arg Phe  
                   500                  505

<210> 118

<211> 505

<212> PRT

<213> Neisseria meningitidis

<400> 118

Met Leu Tyr Phe Arg Tyr Gly Phe Leu Val Val Trp Cys Ala Ala Gly  
   1                  5                  10                  15

Val Ser Ala Ala Tyr Gly Ala Asp Ala Pro Ala Ile Leu Asp Asp Lys  
                   20                  25                  30

Ala Leu Leu Gln Val Gln Arg Ser Val Ser Asp Lys Trp Ala Glu Ser  
                   35                  40                  45

Asp Trp Lys Val Asp Asn Asp Ala Pro Arg Val Val Asp Gly Asp Phe  
                   50                  55                  60

Leu Leu Ala His Pro Lys Met Leu Glu His Ser Leu Arg Asp Val Leu  
   65                  70                  75                  80

Asn Gly Asn Gln Ala Asp Leu Ile Ala Ser Leu Ala Asp Leu Tyr Ala  
                   85                  90                  95

Lys Leu Pro Asp Tyr Asp Ala Val Leu Tyr Gly Arg Ala Arg Ala Leu  
                   100                  105                  110

Leu Ala Lys Leu Ala Gly Arg Pro Ala Glu Ala Val Ala Arg Tyr Arg  
                   115                  120                  125

Glu Leu His Gly Glu Asn Ala Ala Asp Glu Arg Ile Leu Leu Asp Leu  
                   130                  135                  140

Ala Ala Ala Glu Phe Asp Asp Phe Arg Leu Lys Ser Ala Glu Arg His  
   145                  150                  155                  160

Phe Ala Glu Ala Glu Lys Leu Asp Leu Pro Ala Pro Val Leu Glu Asn  
                   165                  170                  175

Val Gly Arg Phe Arg Lys Lys Ala Glu Gly Leu Thr Gly Trp Arg Phe  
                   180                  185                  190

Ser Gly Gly Ile Ser Pro Ala Val Asn Arg Asn Ala Asn Asn Ala Ala  
                   195                  200                  205



Pro Gln Tyr Cys Arg Gln Asn Gly Gly Arg Gln Ile Cys Ser Val Ser  
 210 215 220  
 Arg Ala Glu Arg Ala Ala Gly Leu Asn Tyr Glu Ile Glu Ala Glu Lys  
 225 230 235 240  
 Leu Thr Ala Leu Ala Asp Asn His Tyr Leu Leu Phe Arg Ser Asn Ile  
 245 250 255  
 Gly Gly Thr Ser Tyr Tyr Phe Ser Lys Lys Ser Ala Tyr Asp Asp Gly  
 260 265 270  
 Phe Gly Arg Ala Tyr Leu Gly Trp Gln Tyr Lys Asn Ala Arg Gln Thr  
 275 280 285  
 Ala Gly Ile Leu Pro Phe Tyr Gln Val Gln Leu Ser Gly Ser Asp Gly  
 290 295 300  
 Phe Asp Ala Lys Thr Lys Arg Val Asn Asn Arg Arg Leu Pro Pro Tyr  
 305 310 315 320  
 Met Leu Ala His Gly Val Gly Val Gln Leu Ser His Thr Tyr Arg Pro  
 325 330 335  
 Asn Pro Gly Trp Gln Phe Ser Val Ala Leu Glu His Tyr Arg Gln Arg  
 340 345 350  
 Tyr Arg Glu Gln Asp Arg Ala Glu Tyr Asn Asn Gly Arg Gln Asp Gly  
 355 360 365  
 Phe Tyr Val Ser Ser Ala Lys Arg Leu Gly Glu Ser Ala Thr Val Phe  
 370 375 380  
 Gly Gly Trp Gln Phe Val Arg Phe Val Pro Lys Arg Glu Thr Val Gly  
 385 390 395 400  
 Gly Ala Val Asn Asn Ala Ala Tyr Arg Arg Asn Gly Val Tyr Ala Gly  
 405 410 415  
 Trp Ala Gln Glu Trp Arg Gln Leu Gly Gly Leu Asn Ser Arg Val Ser  
 420 425 430  
 Ala Ser Tyr Ala Arg Arg Asn Tyr Lys Gly Val Ala Ala Phe Ser Thr  
 435 440 445  
 Glu Ala Gln Arg Asn Arg Glu Trp Asn Val Ser Leu Ala Leu Ser His  
 450 455 460

Asp Lys Leu Ser Tyr Lys Gly Ile Val Pro Ala Leu Asn Tyr Arg Phe  
 465 470 475 480

Gly Arg Thr Glu Ser Asn Val Pro Tyr Ala Lys Arg Arg Asn Ser Glu  
 485 490 495

Val Phe Val Ser Ala Asp Trp Arg Phe  
 500 505

<210> 119

<211> 756

<212> DNA

<213> *Neisseria meningitidis*

<220>

<221> CDS

<222> (1)..(756)

<400> 119

atg gaa acg cat tcg ggc tgt ttt ttg cgg aag acg gta atg aaa gac 48  
 Met Glu Thr His Ser Gly Cys Phe Leu Arg Lys Thr Val Met Lys Asp  
 1 5 10 15

gat gtt ttg aaa cag cag gca cac gcg gcg ata cag aag aaa ctg ggc 96  
 Asp Val Leu Lys Gln Gln Ala His Ala Ala Ile Gln Lys Lys Leu Gly  
 20 25 30

tac gcg ttc cgc gat att tcg ctt ttg cgg cag gct ttg acg cac agg 144  
 Tyr Ala Phe Arg Asp Ile Ser Leu Leu Arg Gln Ala Leu Thr His Arg  
 35 40 45

agc cat cat gcg aag cac aac gag cgg ttc gag ttt gtc ggc gat tcg 192  
 Ser His His Ala Lys His Asn Glu Arg Phe Glu Phe Val Gly Asp Ser  
 50 55 60

att ttg aat tat acg gtg gcg cgg atg ctg ttt gac gcg ttt ccg aag 240  
 Ile Leu Asn Tyr Thr Val Ala Arg Met Leu Phe Asp Ala Phe Pro Lys  
 65 70 75 80

ttg acc gag ggc gag ttg tcg cgg ttg cgg gca agt ctg gtc aat gag 288  
 Leu Thr Glu Gly Glu Leu Ser Arg Leu Arg Ala Ser Leu Val Asn Glu  
 85 90 95

ggc gtg ctg gcg gaa atg gcg gcg gaa atg aat gtc ggc gac ggc ctg 336  
 Gly Val Leu Ala Glu Met Ala Ala Glu Met Asn Val Gly Asp Gly Leu

100	105	110	
tac ttg ggg gcg ggc gag ttg aag agc ggc ggc ttc aga cgg cct tcg			384
Tyr Leu Gly Ala Gly Glu Leu Lys Ser Gly Gly Phe Arg Arg Pro Ser			
115	120	125	
ata ctg gcg gac gcg atg gag gcg atg ttt gcg gcg gtc agc ttc gat			432
Ile Leu Ala Asp Ala Met Glu Ala Met Phe Ala Ala Val Ser Phe Asp			
130	135	140	
gcg gat ttc aac acg gcg gaa aag gtg gtg cgc cat ttg ttt gca gaa			480
Ala Asp Phe Asn Thr Ala Glu Lys Val Val Arg His Leu Phe Ala Glu			
145	150	155	160
cgc gtc cgg cga gtc gat ttc caa aat cag gca aaa gac ggc aaa act			528
Arg Val Arg Arg Val Asp Phe Gln Asn Gln Ala Lys Asp Gly Lys Thr			
	165	170	175
gct ttg cag gag gcg ttg cag gcg cgc cgt ttc gcc ttg ccg aaa tac			576
Ala Leu Gln Glu Ala Leu Gln Ala Arg Arg Phe Ala Leu Pro Lys Tyr			
	180	185	190
cgt atc gaa gag caa atc ggc cat gcc aac gac agt atg ttt gtc att			624
Arg Ile Glu Glu Gln Ile Gly His Ala Asn Asp Ser Met Phe Val Ile			
	195	200	205
tcc tgc gat ttg ggc gaa ctg ggt ttc gtg tgc cgt gcc aaa ggg acg			672
Ser Cys Asp Leu Gly Glu Leu Gly Phe Val Cys Arg Ala Lys Gly Thr			
	210	215	220
agc cgc aag gcg gcg gag cag gaa gcg gcg aaa gag gct ttg aaa tgg			720
Ser Arg Lys Ala Ala Glu Gln Glu Ala Ala Lys Glu Ala Leu Lys Trp			
225	230	235	240
ctg gaa gag aag ctg ccg ctg aag aag aaa aag aaa			756
Leu Glu Glu Lys Leu Pro Leu Lys Lys Lys Lys Lys			
	245	250	

&lt;210&gt; 120

&lt;211&gt; 252

&lt;212&gt; PRT

&lt;213&gt; Neisseria meningitidis

&lt;400&gt; 120

Met Glu Thr His Ser Gly Cys Phe Leu Arg Lys Thr Val Met Lys Asp

1

5

10

15

Asp Val Leu Lys Gln Gln Ala His Ala Ala Ile Gln Lys Lys Leu Gly  
                   20                  25                  30  
 Tyr Ala Phe Arg Asp Ile Ser Leu Leu Arg Gln Ala Leu Thr His Arg  
                   35                  40                  45  
 Ser His His Ala Lys His Asn Glu Arg Phe Glu Phe Val Gly Asp Ser  
                   50                  55                  60  
 Ile Leu Asn Tyr Thr Val Ala Arg Met Leu Phe Asp Ala Phe Pro Lys  
                   65                  70                  75                  80  
 Leu Thr Glu Gly Glu Leu Ser Arg Leu Arg Ala Ser Leu Val Asn Glu  
                   85                  90                  95  
 Gly Val Leu Ala Glu Met Ala Ala Glu Met Asn Val Gly Asp Gly Leu  
                   100                  105                  110  
 Tyr Leu Gly Ala Gly Glu Leu Lys Ser Gly Gly Phe Arg Arg Pro Ser  
                   115                  120                  125  
 Ile Leu Ala Asp Ala Met Glu Ala Met Phe Ala Ala Val Ser Phe Asp  
                   130                  135                  140  
 Ala Asp Phe Asn Thr Ala Glu Lys Val Val Arg His Leu Phe Ala Glu  
                   145                  150                  155                  160  
 Arg Val Arg Arg Val Asp Phe Gln Asn Gln Ala Lys Asp Gly Lys Thr  
                   165                  170                  175  
 Ala Leu Gln Glu Ala Leu Gln Ala Arg Arg Phe Ala Leu Pro Lys Tyr  
                   180                  185                  190  
 Arg Ile Glu Glu Gln Ile Gly His Ala Asn Asp Ser Met Phe Val Ile  
                   195                  200                  205  
 Ser Cys Asp Leu Gly Glu Leu Gly Phe Val Cys Arg Ala Lys Gly Thr  
                   210                  215                  220  
 Ser Arg Lys Ala Ala Glu Gln Glu Ala Ala Lys Glu Ala Leu Lys Trp  
                   225                  230                  235                  240  
 Leu Glu Glu Lys Leu Pro Leu Lys Lys Lys Lys Lys  
                   245                  250

<210> 121

&lt;211&gt; 570

&lt;212&gt; DNA

<213> *Neisseria meningitidis*

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(570)

&lt;400&gt; 121

atg gac aat cac gcc gaa gca cac tgg caa aac ggc tgg ctt caa agc	48
Met Asp Asn His Ala Glu Ala His Trp Gln Asn Gly Trp Leu Gln Ser	
1 5 10 15	
ata cgc cat acc ccg tcg ccc aat ttc agc ccg agg gaa acg ggg gaa	96
Ile Arg His Thr Pro Ser Pro Asn Phe Ser Pro Arg Glu Thr Gly Glu	
20 25 30	
acg gtt tcc ctg atc gtg ttg cac aac att tca ctg ccg ccg ttc gaa	144
Thr Val Ser Leu Ile Val Leu His Asn Ile Ser Leu Pro Pro Phe Glu	
35 40 45	
tac ggc acg gat gct gtg gaa aag ctg ttt gcc aac cgg ctc gac ccc	192
Tyr Gly Thr Asp Ala Val Glu Lys Leu Phe Ala Asn Arg Leu Asp Pro	
50 55 60	
aac gga cat ccg ttc ttc agc ctg ata cac act ttg cgc gta tcc agc	240
Asn Gly His Pro Phe Phe Ser Leu Ile His Thr Leu Arg Val Ser Ser	
65 70 75 80	
cat ttc tta atc aaa cgc gac ggc aaa acg gtg cag ttc gta tca tgc	288
His Phe Leu Ile Lys Arg Asp Gly Lys Thr Val Gln Phe Val Ser Cys	
85 90 95	
ggc gat atg gcg tac cac gcg ggc gta tcc tcg ttt cgc gga cgg gaa	336
Gly Asp Met Ala Tyr His Ala Gly Val Ser Ser Phe Arg Gly Arg Glu	
100 105 110	
aaa tgc aac gca ttt tcc atc ggc atc gaa ttg gaa ggc tgc gat ttc	384
Lys Cys Asn Ala Phe Ser Ile Gly Ile Glu Leu Glu Gly Cys Asp Phe	
115 120 125	
gaa ccc ttt acc gaa gcg caa tac cgt tcg ctc gaa aca ttg ttg gaa	432
Glu Pro Phe Thr Glu Ala Gln Tyr Arg Ser Leu Glu Thr Leu Leu Glu	
130 135 140	
gca ctc tgc cgc cgc tac ccc gtt acc gca gta acc gga cat cag gac	480
Ala Leu Cys Arg Arg Tyr Pro Val Thr Ala Val Thr Gly His Gln Asp	
145 150 155 160	

atc gcg ccc ggc cgc aaa acc gac ccc ggc cac ttt ttc gac tgg cgg 528  
 Ile Ala Pro Gly Arg Lys Thr Asp Pro Gly His Phe Phe Asp Trp Arg  
                   165                  170                  175

cgg ata cgg gag aaa ggg ttt ccc gta gac aga aat gcc gtc 570  
 Arg Ile Arg Glu Lys Gly Phe Pro Val Asp Arg Asn Ala Val  
                   180                  185                  190

<210> 122

<211> 190

<212> PRT

<213> *Neisseria meningitidis*

<400> 122

Met Asp Asn His Ala Glu Ala His Trp Gln Asn Gly Trp Leu Gln Ser  
       1                  5                  10                  15

Ile Arg His Thr Pro Ser Pro Asn Phe Ser Pro Arg Glu Thr Gly Glu  
                   20                  25                  30

Thr Val Ser Leu Ile Val Leu His Asn Ile Ser Leu Pro Pro Phe Glu  
                   35                  40                  45

Tyr Gly Thr Asp Ala Val Glu Lys Leu Phe Ala Asn Arg Leu Asp Pro  
                   50                  55                  60

Asn Gly His Pro Phe Phe Ser Leu Ile His Thr Leu Arg Val Ser Ser  
       65                  70                  75                  80

His Phe Leu Ile Lys Arg Asp Gly Lys Thr Val Gln Phe Val Ser Cys  
                   85                  90                  95

Gly Asp Met Ala Tyr His Ala Gly Val Ser Ser Phe Arg Gly Arg Glu  
                   100                  105                  110

Lys Cys Asn Ala Phe Ser Ile Gly Ile Glu Leu Glu Gly Cys Asp Phe  
                   115                  120                  125

Glu Pro Phe Thr Glu Ala Gln Tyr Arg Ser Leu Glu Thr Leu Leu Glu  
                   130                  135                  140

Ala Leu Cys Arg Arg Tyr Pro Val Thr Ala Val Thr Gly His Gln Asp  
       145                  150                  155                  160

Ile Ala Pro Gly Arg Lys Thr Asp Pro Gly His Phe Phe Asp Trp Arg  
                   165                  170                  175

Arg Ile Arg Glu Lys Gly Phe Pro Val Asp Arg Asn Ala Val  
 180 185 190

<210> 123

<211> 2274

<212> DNA

<213> *Neisseria meningitidis*

<220>

<221> CDS

<222> (1)..(2274)

<400> 123

atg aca aca tta cat ttc tca ggc ttc ccg cgt gtc ggt gcc ttc cgc 48  
 Met Thr Thr Leu His Phe Ser Gly Phe Pro Arg Val Gly Ala Phe Arg  
 1 5 10 15

gaa ttg aaa ttc gca caa gaa aaa tac tgg cgc aaa gaa atc agc gag 96  
 Glu Leu Lys Phe Ala Gln Glu Lys Tyr Trp Arg Lys Glu Ile Ser Glu  
 20 25 30

caa gaa ttg ctg gct gtt gct aaa gac ttg cgc gag aaa aac tgg aaa 144  
 Gln Glu Leu Leu Ala Val Ala Lys Asp Leu Arg Glu Lys Asn Trp Lys  
 35 40 45

cac cag gcc gct gcc aac gcc gat tac gtt gcc gta ggc gat ttc act 192  
 His Gln Ala Ala Ala Asn Ala Asp Tyr Val Ala Val Gly Asp Phe Thr  
 50 55 60

ttc tac gac cac atc ctc gac ctg caa gtc gcc acc ggc gcg att ccc 240  
 Phe Tyr Asp His Ile Leu Asp Leu Gln Val Ala Thr Gly Ala Ile Pro  
 65 70 75 80

gcc cgc ttc ggc ttc gac agc caa aac cta tct ttg gaa caa ttc ttc 288  
 Ala Arg Phe Gly Phe Asp Ser Gln Asn Leu Ser Leu Glu Gln Phe Phe  
 85 90 95

caa ctg gcg cgc ggt aac aaa gac caa ttc gct atc gaa atg acc aaa 336  
 Gln Leu Ala Arg Gly Asn Lys Asp Gln Phe Ala Ile Glu Met Thr Lys  
 100 105 110

tgg ttc gac acc aac tac cac tac ttg gtg cct gaa ttc cac gcc gat 384  
 Trp Phe Asp Thr Asn Tyr His Tyr Leu Val Pro Glu Phe His Ala Asp  
 115 120 125

acc gaa ttt aaa gcc aat gcc aaa cac tac gtt caa cag ctg caa gaa	432
Thr Glu Phe Lys Ala Asn Ala Lys His Tyr Val Gln Gln Leu Gln Glu	
130 135 140	
gcc caa gct ttg ggc ctg aaa gcc aaa ccg acc gtt gtg ggt ccg ttg	480
Ala Gln Ala Leu Gly Leu Lys Ala Lys Pro Thr Val Val Gly Pro Leu	
145 150 155 160	
act ttc ctg tgg gtc ggt aaa gaa aaa ggc gcc gtt gaa ttc gac cgt	528
Thr Phe Leu Trp Val Gly Lys Glu Lys Gly Ala Val Glu Phe Asp Arg	
165 170 175	
ctg agc ctg ttg cct aaa ctg ttg cct gtt tac gtt gaa atc ctg act	576
Leu Ser Leu Leu Pro Lys Leu Leu Pro Val Tyr Val Glu Ile Leu Thr	
180 185 190	
gct ttg gtt gaa gcc ggt gcc gag tgg att caa atc gac gag cct gct	624
Ala Leu Val Glu Ala Gly Ala Glu Trp Ile Gln Ile Asp Glu Pro Ala	
195 200 205	
ttg act gtt gac ctg cct aaa gaa tgg gta gaa gca tac aaa gac gtt	672
Leu Thr Val Asp Leu Pro Lys Glu Trp Val Glu Ala Tyr Lys Asp Val	
210 215 220	
tac gcc act ttg agc aaa gta agt gcc aaa atc ctg ctg agc act tac	720
Tyr Ala Thr Leu Ser Lys Val Ser Ala Lys Ile Leu Leu Ser Thr Tyr	
225 230 235 240	
ttc ggt tct gtt gcc gaa cac gcc gca ttg ttg aaa tcc ctg cct gtt	768
Phe Gly Ser Val Ala Glu His Ala Ala Leu Leu Lys Ser Leu Pro Val	
245 250 255	
gac ggc ctg cac atc gac ttg gta cgc gct cct gaa caa ctg gat gcg	816
Asp Gly Leu His Ile Asp Leu Val Arg Ala Pro Glu Gln Leu Asp Ala	
260 265 270	
ttc gcc gac tac gac aaa gtt ctg tct gcc ggc gtc att gac ggc cgc	864
Phe Ala Asp Tyr Asp Lys Val Leu Ser Ala Gly Val Ile Asp Gly Arg	
275 280 285	
aat att tgg cgc gcc aac ctg aac aaa gtt ttg gaa act gtt gag ctt	912
Asn Ile Trp Arg Ala Asn Leu Asn Lys Val Leu Glu Thr Val Glu Leu	
290 295 300	
ctg caa gcc aaa ctg ggc gac cgt ttg tgg att tcc agc tct tgc tcg	960
Leu Gln Ala Lys Leu Gly Asp Arg Leu Trp Ile Ser Ser Ser Cys Ser	
305 310 315 320	



ctg ctg cac act ccg ttt gac ttg tca gtt gaa gaa aaa ctg aaa gcc	1008
Leu Leu His Thr Pro Phe Asp Leu Ser Val Glu Glu Lys Leu Lys Ala	
325 330 335	
aac aaa ccc gac ctg tac tct tgg ttg gca ttc acc ctg caa aaa acc	1056
Asn Lys Pro Asp Leu Tyr Ser Trp Leu Ala Phe Thr Leu Gln Lys Thr	
340 345 350	
caa gaa ttg cgc gtc ctg aaa gcc gca ttg aac gaa ggc cgt gat tct	1104
Gln Glu Leu Arg Val Leu Lys Ala Ala Leu Asn Glu Gly Arg Asp Ser	
355 360 365	
gtt gcc gaa gaa ctg gct gcc agc caa gct gct gcc gac tcc cgt gcc	1152
Val Ala Glu Glu Leu Ala Ala Ser Gln Ala Ala Ala Asp Ser Arg Ala	
370 375 380	
aac agc agc gaa atc cac cgt gca gac gtt gcc aaa cgc ctg gcc gat	1200
Asn Ser Ser Glu Ile His Arg Ala Asp Val Ala Lys Arg Leu Ala Asp	
385 390 395 400	
ttg cct gcc aac gca gac caa cgc aaa tcc cca ttt gcc gac cgt atc	1248
Leu Pro Ala Asn Ala Asp Gln Arg Lys Ser Pro Phe Ala Asp Arg Ile	
405 410 415	
aaa gcg caa caa gca tgg ttg aac ctg cct ctg ctg ccg acg acc aac	1296
Lys Ala Gln Gln Ala Trp Leu Asn Leu Pro Leu Leu Pro Thr Thr Asn	
420 425 430	
atc ggt tct ttc ccg caa act acc gaa atc cgc caa gca cgc gca gcc	1344
Ile Gly Ser Phe Pro Gln Thr Thr Glu Ile Arg Gln Ala Arg Ala Ala	
435 440 445	
ttc aaa aaa ggc gaa ctg tct gcc gcc gat tac gaa gcc gcg atg aaa	1392
Phe Lys Lys Gly Glu Leu Ser Ala Ala Asp Tyr Glu Ala Ala Met Lys	
450 455 460	
aaa gaa atc gcc ttg gtg gtt gaa gag caa gaa aaa ctg gac ttg gac	1440
Lys Glu Ile Ala Leu Val Val Glu Glu Gln Glu Lys Leu Asp Leu Asp	
465 470 475 480	
gta ctg gta cac ggc gaa gcc gag cgt aac gac atg gtt gaa tac ttc	1488
Val Leu Val His Gly Glu Ala Glu Arg Asn Asp Met Val Glu Tyr Phe	
485 490 495	
ggc gaa ttg ttg agc ggt ttt gca ttc acc caa tat ggc tgg gta caa	1536
Gly Glu Leu Leu Ser Gly Phe Ala Phe Thr Gln Tyr Gly Trp Val Gln	
500 505 510	

agc tac ggt tct cgc tgc gtt aaa cca ccg att atc ttc ggt gac gta	1584
Ser Tyr Gly Ser Arg Cys Val Lys Pro Pro Ile Ile Phe Gly Asp Val	
515 520 525	
agc cgt cct gaa gcc atg acc gta gct tgg tct act tac gca caa agc	1632
Ser Arg Pro Glu Ala Met Thr Val Ala Trp Ser Thr Tyr Ala Gln Ser	
530 535 540	
ctg acc aaa cgc ccg atg aaa ggt atg ttg acc ggc cct gta acc att	1680
Leu Thr Lys Arg Pro Met Lys Gly Met Leu Thr Gly Pro Val Thr Ile	
545 550 555 560	
ctg caa tgg tct ttc gtc cgc aac gat att cct cgc tct acc gtg tgt	1728
Leu Gln Trp Ser Phe Val Arg Asn Asp Ile Pro Arg Ser Thr Val Cys	
565 570 575	
aaa caa atc gca ctg gct ctg aac gac gaa gta ttg gat ctg gaa aaa	1776
Lys Gln Ile Ala Leu Ala Leu Asn Asp Glu Val Leu Asp Leu Glu Lys	
580 585 590	
gca ggc atc aaa gtc atc caa atc gac gaa cct gcc atc cgc gaa ggc	1824
Ala Gly Ile Lys Val Ile Gln Ile Asp Glu Pro Ala Ile Arg Glu Gly	
595 600 605	
ctg cct ttg aaa cgt gcc gat tgg gat gcc tac ctg aac tgg gcc ggc	1872
Leu Pro Leu Lys Arg Ala Asp Trp Asp Ala Tyr Leu Asn Trp Ala Gly	
610 615 620	
gaa tct ttc cgc ctg tcc tct acc ggt tgc gaa gac agc act caa atc	1920
Glu Ser Phe Arg Leu Ser Ser Thr Gly Cys Glu Asp Ser Thr Gln Ile	
625 630 635 640	
cac acc cat atg tgc tac tct gag ttc aac gac atc ctg cct gcg att	1968
His Thr His Met Cys Tyr Ser Glu Phe Asn Asp Ile Leu Pro Ala Ile	
645 650 655	
gct gca atg gat gcg gac gtg atc acc atc gag act tca cgt tcc gac	2016
Ala Ala Met Asp Ala Asp Val Ile Thr Ile Glu Thr Ser Arg Ser Asp	
660 665 670	
atg gaa ctc ttg acc gcg ttc ggc gaa ttc aaa tac ccg aac gac atc	2064
Met Glu Leu Leu Thr Ala Phe Gly Glu Phe Lys Tyr Pro Asn Asp Ile	
675 680 685	
ggc ccg ggg gtt tac gac atc cac agc ccg cgc gta ccg aca gaa gcc	2112
Gly Pro Gly Val Tyr Asp Ile His Ser Pro Arg Val Pro Thr Glu Ala	
690 695 700	

gaa gtg gag cac ctg ttg cgc aaa gcc atc gag gtt gta ccg gtt gaa 2160  
 Glu Val Glu His Leu Leu Arg Lys Ala Ile Glu Val Val Pro Val Glu  
 705 710 715 720

cgt ctg tgg gtt aac ccg gac tgc ggc ctg aaa aca cgc ggc tgg aaa 2208  
 Arg Leu Trp Val Asn Pro Asp Cys Gly Leu Lys Thr Arg Gly Trp Lys  
 725 730 735

gaa act ctg gaa caa ctc caa gtg atg atg aac gta acc cac aaa ttg 2256  
 Glu Thr Leu Glu Gln Leu Gln Val Met Met Asn Val Thr His Lys Leu  
 740 745 750

cgt gcc gaa ttg gcg aaa 2274  
 Arg Ala Glu Leu Ala Lys  
 755

<210> 124

<211> 758

<212> PRT

<213> Neisseria meningitidis

<400> 124

Met Thr Thr Leu His Phe Ser Gly Phe Pro Arg Val Gly Ala Phe Arg  
 1 5 10 15

Glu Leu Lys Phe Ala Gln Glu Lys Tyr Trp Arg Lys Glu Ile Ser Glu  
 20 25 30

Gln Glu Leu Leu Ala Val Ala Lys Asp Leu Arg Glu Lys Asn Trp Lys  
 35 40 45

His Gln Ala Ala Ala Asn Ala Asp Tyr Val Ala Val Gly Asp Phe Thr  
 50 55 60

Phe Tyr Asp His Ile Leu Asp Leu Gln Val Ala Thr Gly Ala Ile Pro  
 65 70 75 80

Ala Arg Phe Gly Phe Asp Ser Gln Asn Leu Ser Leu Glu Gln Phe Phe  
 85 90 95

Gln Leu Ala Arg Gly Asn Lys Asp Gln Phe Ala Ile Glu Met Thr Lys  
 100 105 110

Trp Phe Asp Thr Asn Tyr His Tyr Leu Val Pro Glu Phe His Ala Asp  
 115 120 125

Thr Glu Phe Lys Ala Asn Ala Lys His Tyr Val Gln Gln Leu Gln Glu

130		135		140
Ala Gln Ala Leu Gly Leu Lys Ala Lys Pro Thr Val Val Gly Pro Leu				
145		150		155
				160
Thr Phe Leu Trp Val Gly Lys Glu Lys Gly Ala Val Glu Phe Asp Arg				
	165		170	175
Leu Ser Leu Leu Pro Lys Leu Leu Pro Val Tyr Val Glu Ile Leu Thr				
	180		185	190
Ala Leu Val Glu Ala Gly Ala Glu Trp Ile Gln Ile Asp Glu Pro Ala				
	195		200	205
Leu Thr Val Asp Leu Pro Lys Glu Trp Val Glu Ala Tyr Lys Asp Val				
	210		215	220
Tyr Ala Thr Leu Ser Lys Val Ser Ala Lys Ile Leu Leu Ser Thr Tyr				
	225		230	235
				240
Phe Gly Ser Val Ala Glu His Ala Ala Leu Leu Lys Ser Leu Pro Val				
	245		250	255
Asp Gly Leu His Ile Asp Leu Val Arg Ala Pro Glu Gln Leu Asp Ala				
	260		265	270
Phe Ala Asp Tyr Asp Lys Val Leu Ser Ala Gly Val Ile Asp Gly Arg				
	275		280	285
Asn Ile Trp Arg Ala Asn Leu Asn Lys Val Leu Glu Thr Val Glu Leu				
	290		295	300
Leu Gln Ala Lys Leu Gly Asp Arg Leu Trp Ile Ser Ser Ser Cys Ser				
	305		310	315
				320
Leu Leu His Thr Pro Phe Asp Leu Ser Val Glu Glu Lys Leu Lys Ala				
	325		330	335
Asn Lys Pro Asp Leu Tyr Ser Trp Leu Ala Phe Thr Leu Gln Lys Thr				
	340		345	350
Gln Glu Leu Arg Val Leu Lys Ala Ala Leu Asn Glu Gly Arg Asp Ser				
	355		360	365
Val Ala Glu Glu Leu Ala Ala Ser Gln Ala Ala Ala Asp Ser Arg Ala				
	370		375	380
Asn Ser Ser Glu Ile His Arg Ala Asp Val Ala Lys Arg Leu Ala Asp				

385		390		395		400
Leu Pro Ala Asn Ala Asp Gln Arg Lys Ser Pro Phe Ala Asp Arg Ile						
	405		410		415	
Lys Ala Gln Gln Ala Trp Leu Asn Leu Pro Leu Leu Pro Thr Thr Asn						
	420		425		430	
Ile Gly Ser Phe Pro Gln Thr Thr Glu Ile Arg Gln Ala Arg Ala Ala						
	435		440		445	
Phe Lys Lys Gly Glu Leu Ser Ala Ala Asp Tyr Glu Ala Ala Met Lys						
	450		455		460	
Lys Glu Ile Ala Leu Val Val Glu Glu Gln Glu Lys Leu Asp Leu Asp						
	465		470		475	
Val Leu Val His Gly Glu Ala Glu Arg Asn Asp Met Val Glu Tyr Phe						
	485		490		495	
Gly Glu Leu Leu Ser Gly Phe Ala Phe Thr Gln Tyr Gly Trp Val Gln						
	500		505		510	
Ser Tyr Gly Ser Arg Cys Val Lys Pro Pro Ile Ile Phe Gly Asp Val						
	515		520		525	
Ser Arg Pro Glu Ala Met Thr Val Ala Trp Ser Thr Tyr Ala Gln Ser						
	530		535		540	
Leu Thr Lys Arg Pro Met Lys Gly Met Leu Thr Gly Pro Val Thr Ile						
	545		550		555	
Leu Gln Trp Ser Phe Val Arg Asn Asp Ile Pro Arg Ser Thr Val Cys						
	565		570		575	
Lys Gln Ile Ala Leu Ala Leu Asn Asp Glu Val Leu Asp Leu Glu Lys						
	580		585		590	
Ala Gly Ile Lys Val Ile Gln Ile Asp Glu Pro Ala Ile Arg Glu Gly						
	595		600		605	
Leu Pro Leu Lys Arg Ala Asp Trp Asp Ala Tyr Leu Asn Trp Ala Gly						
	610		615		620	
Glu Ser Phe Arg Leu Ser Ser Thr Gly Cys Glu Asp Ser Thr Gln Ile						
	625		630		635	
His Thr His Met Cys Tyr Ser Glu Phe Asn Asp Ile Leu Pro Ala Ile						

[illegible]

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<210> 125
<211> 1137
<212> DNA
<213> Neisseria meningitidis
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<220>
<221> CDS
<222> (1)..(1137)
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<400> 125																	
atg	agc	cgt	tta	tgg	ttt	ttt	gcc	gca	aaa	aac	att	ata	atc	cgc	ctt	48	
Met	Ser	Arg	Leu	Trp	Phe	Phe	Ala	Ala	Lys	Asn	Ile	Ile	Ile	Arg	Leu		
1				5					10					15			
att	tac	cta	ttg	ccc	aag	gag	aca	caa	atg	gca	ctc	gta	tcc	atg	cgc	96	
Ile	Tyr	Leu	Leu	Pro	Lys	Glu	Thr	Gln	Met	Ala	Leu	Val	Ser	Met	Arg		
			20					25					30				
caa	ctg	ctt	gat	cat	gct	gcc	gaa	aac	agc	tac	ggc	ctg	ccc	gcg	ttc	144	
Gln	Leu	Leu	Asp	His	Ala	Ala	Glu	Asn	Ser	Tyr	Gly	Leu	Pro	Ala	Phe		
		35					40					45					
aac	gtc	aac	aac	ctc	gaa	caa	atg	cgc	gcc	att	atg	gaa	gcc	gcc	gac	192	

Asn	Val	Asn	Asn	Leu	Glu	Gln	Met	Arg	Ala	Ile	Met	Glu	Ala	Ala	Asp	
50						55					60					
caa	gtc	aac	gcg	ccc	gtc	atc	gta	cag	gcg	agc	gca	ggt	gcg	cgc	aaa	240
Gln	Val	Asn	Ala	Pro	Val	Ile	Val	Gln	Ala	Ser	Ala	Gly	Ala	Arg	Lys	
65					70				75						80	
tac	gcg	ggc	gcg	ccg	ttt	ttg	cgc	cac	ctg	att	ttg	gcg	gct	gtc	gaa	288
Tyr	Ala	Gly	Ala	Pro	Phe	Leu	Arg	His	Leu	Ile	Leu	Ala	Ala	Val	Glu	
				85				90						95		
gaa	ttt	ccg	cac	atc	ccc	gtc	gtg	atg	cac	caa	gac	cac	ggc	gca	tcg	336
Glu	Phe	Pro	His	Ile	Pro	Val	Val	Met	His	Gln	Asp	His	Gly	Ala	Ser	
			100					105					110			
ccc	gac	gtg	tgc	caa	cgc	tcc	atc	caa	ctg	ggc	ttt	tcc	tcc	gtg	atg	384
Pro	Asp	Val	Cys	Gln	Arg	Ser	Ile	Gln	Leu	Gly	Phe	Ser	Ser	Val	Met	
		115					120					125				
atg	gac	ggc	tcg	ctg	atg	gaa	gac	ggc	aaa	acc	cct	tct	tct	tat	gaa	432
Met	Asp	Gly	Ser	Leu	Met	Glu	Asp	Gly	Lys	Thr	Pro	Ser	Ser	Tyr	Glu	
	130					135					140					
tac	aac	gtc	aac	gcc	acc	cgt	acc	gtg	gtt	aat	ttc	tcc	cac	gcc	tgc	480
Tyr	Asn	Val	Asn	Ala	Thr	Arg	Thr	Val	Val	Asn	Phe	Ser	His	Ala	Cys	
145					150					155					160	
ggc	gta	tcc	gtt	gaa	ggc	gaa	atc	ggc	gta	ttg	ggc	aac	ctc	gaa	act	528
Gly	Val	Ser	Val	Glu	Gly	Glu	Ile	Gly	Val	Leu	Gly	Asn	Leu	Glu	Thr	
				165					170					175		
ggc	gaa	gcc	ggc	gaa	gaa	gac	ggt	gta	ggc	gca	gtg	ggc	aaa	ctt	tcc	576
Gly	Glu	Ala	Gly	Glu	Glu	Asp	Gly	Val	Gly	Ala	Val	Gly	Lys	Leu	Ser	
			180					185					190			
cac	gac	caa	atg	ctc	acc	agc	gtc	gaa	gat	gcc	gtg	cgt	ttc	gtt	aaa	624
His	Asp	Gln	Met	Leu	Thr	Ser	Val	Glu	Asp	Ala	Val	Arg	Phe	Val	Lys	
		195					200					205				
gat	acc	ggc	gtt	gac	gca	ttg	gcg	att	gcc	gtc	ggc	acc	agc	cac	ggc	672
Asp	Thr	Gly	Val	Asp	Ala	Leu	Ala	Ile	Ala	Val	Gly	Thr	Ser	His	Gly	
	210					215				220						
gcg	tac	aaa	ttc	acc	cgt	ccg	ccc	aca	ggc	gac	gtg	ttg	cgt	atc	gac	720
Ala	Tyr	Lys	Phe	Thr	Arg	Pro	Pro	Thr	Gly	Asp	Val	Leu	Arg	Ile	Asp	
225					230					235					240	
cgc	atc	aaa	gaa	atc	cac	caa	gcc	ctg	ccc	aat	aca	cac	atc	gtg	atg	768

Arg Ile Lys Glu Ile His Gln Ala Leu Pro Asn Thr His Ile Val Met  
 245 250 255  
 cac ggc tcc agc tcc gtt ccg caa gaa tgg ctg aaa gtc atc aac gaa 816  
 His Gly Ser Ser Ser Val Pro Gln Glu Trp Leu Lys Val Ile Asn Glu  
 260 265 270  
 tac ggc ggc aat atc ggc gaa acc tac ggc gtg ccg gtt gaa gaa atc 864  
 Tyr Gly Gly Asn Ile Gly Glu Thr Tyr Gly Val Pro Val Glu Glu Ile  
 275 280 285  
 gtc gaa ggc atc aaa cac ggc gtg cgt aaa gtc aac atc gat acc gac 912  
 Val Glu Gly Ile Lys His Gly Val Arg Lys Val Asn Ile Asp Thr Asp  
 290 295 300  
 ttg cgc ctt gct tcc acc ggc gcg gta cgc cgc tac ctt gcc gaa aac 960  
 Leu Arg Leu Ala Ser Thr Gly Ala Val Arg Arg Tyr Leu Ala Glu Asn  
 305 310 315 320  
 ccg tcc gac ttc gat ccg cgc aaa tat ttg agc aaa acc att gaa gcg 1008  
 Pro Ser Asp Phe Asp Pro Arg Lys Tyr Leu Ser Lys Thr Ile Glu Ala  
 325 330 335  
 atg aag caa atc tgc ctc gac cgc tac ctc gcg ttc ggt tgc gaa ggt 1056  
 Met Lys Gln Ile Cys Leu Asp Arg Tyr Leu Ala Phe Gly Cys Glu Gly  
 340 345 350  
 cag gca ggc aaa atc aaa ccg gtt tcc ttg gaa aaa atg gca aac cgt 1104  
 Gln Ala Gly Lys Ile Lys Pro Val Ser Leu Glu Lys Met Ala Asn Arg  
 355 360 365  
 tat gcc aag ggc gaa ttg aac caa atc gtc aaa 1137  
 Tyr Ala Lys Gly Glu Leu Asn Gln Ile Val Lys  
 370 375

&lt;210&gt; 126

&lt;211&gt; 379

&lt;212&gt; PRT

&lt;213&gt; Neisseria meningitidis

&lt;400&gt; 126

Met Ser Arg Leu Trp Phe Phe Ala Ala Lys Asn Ile Ile Ile Arg Leu  
 1 5 10 15

Ile Tyr Leu Leu Pro Lys Glu Thr Gln Met Ala Leu Val Ser Met Arg  
 20 25 30



Gln Leu Leu Asp His Ala Ala Glu Asn Ser Tyr Gly Leu Pro Ala Phe  
 35 40 45  
 Asn Val Asn Asn Leu Glu Gln Met Arg Ala Ile Met Glu Ala Ala Asp  
 50 55 60  
 Gln Val Asn Ala Pro Val Ile Val Gln Ala Ser Ala Gly Ala Arg Lys  
 65 70 75 80  
 Tyr Ala Gly Ala Pro Phe Leu Arg His Leu Ile Leu Ala Ala Val Glu  
 85 90 95  
 Glu Phe Pro His Ile Pro Val Val Met His Gln Asp His Gly Ala Ser  
 100 105 110  
 Pro Asp Val Cys Gln Arg Ser Ile Gln Leu Gly Phe Ser Ser Val Met  
 115 120 125  
 Met Asp Gly Ser Leu Met Glu Asp Gly Lys Thr Pro Ser Ser Tyr Glu  
 130 135 140  
 Tyr Asn Val Asn Ala Thr Arg Thr Val Val Asn Phe Ser His Ala Cys  
 145 150 155 160  
 Gly Val Ser Val Glu Gly Glu Ile Gly Val Leu Gly Asn Leu Glu Thr  
 165 170 175  
 Gly Glu Ala Gly Glu Glu Asp Gly Val Gly Ala Val Gly Lys Leu Ser  
 180 185 190  
 His Asp Gln Met Leu Thr Ser Val Glu Asp Ala Val Arg Phe Val Lys  
 195 200 205  
 Asp Thr Gly Val Asp Ala Leu Ala Ile Ala Val Gly Thr Ser His Gly  
 210 215 220  
 Ala Tyr Lys Phe Thr Arg Pro Pro Thr Gly Asp Val Leu Arg Ile Asp  
 225 230 235 240  
 Arg Ile Lys Glu Ile His Gln Ala Leu Pro Asn Thr His Ile Val Met  
 245 250 255  
 His Gly Ser Ser Ser Val Pro Gln Glu Trp Leu Lys Val Ile Asn Glu  
 260 265 270  
 Tyr Gly Gly Asn Ile Gly Glu Thr Tyr Gly Val Pro Val Glu Glu Ile  
 275 280 285

Val Glu Gly Ile Lys His Gly Val Arg Lys Val Asn Ile Asp Thr Asp  
 290 295 300

Leu Arg Leu Ala Ser Thr Gly Ala Val Arg Arg Tyr Leu Ala Glu Asn  
 305 310 315 320

Pro Ser Asp Phe Asp Pro Arg Lys Tyr Leu Ser Lys Thr Ile Glu Ala  
 325 330 335

Met Lys Gln Ile Cys Leu Asp Arg Tyr Leu Ala Phe Gly Cys Glu Gly  
 340 345 350

Gln Ala Gly Lys Ile Lys Pro Val Ser Leu Glu Lys Met Ala Asn Arg  
 355 360 365

Tyr Ala Lys Gly Glu Leu Asn Gln Ile Val Lys  
 370 375

<210> 127

<211> 444

<212> DNA

<213> Neisseria meningitidis

<220>

<221> CDS

<222> (1)..(444)

<400> 127

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 Val Asp Ala Ala Ala Thr Leu Leu Thr Tyr Lys Cys Pro Ala Glu Asn  
 1 5 10 15

cgc cca aac aca aaa aaa att ggt aat ttt tcc tat tca agg cta caa 96  
 Arg Pro Asn Thr Lys Lys Ile Gly Asn Phe Ser Tyr Ser Arg Leu Gln  
 20 25 30

ttc gac acg cac agg gca tct gcc cga ttt cac aat cat aat agc gga 144  
 Phe Asp Thr His Arg Ala Ser Ala Arg Phe His Asn His Asn Ser Gly  
 35 40 45

gtt aaa aat atg aca gct aaa gga caa atg ttg caa gat ccc ttc ctg 192  
 Val Lys Asn Met Thr Ala Lys Gly Gln Met Leu Gln Asp Pro Phe Leu  
 50 55 60

aac gcc ctg cgt aaa gag cat gtt ccg gtt tcg att tac tta gtt aac 240  
 Asn Ala Leu Arg Lys Glu His Val Pro Val Ser Ile Tyr Leu Val Asn

65	70	75	80	
ggt atc aaa ttg caa ggt cag gtt gag tct ttc gat caa tac gtt gtt				288
Gly Ile Lys Leu Gln Gly Gln Val Glu Ser Phe Asp Gln Tyr Val Val				
	85	90	95	
ctc ctg aga aac act tcc gtc acc caa atg gtt tac aaa cac gcc att				336
Leu Leu Arg Asn Thr Ser Val Thr Gln Met Val Tyr Lys His Ala Ile				
	100	105	110	
tcc acc atc gta ccg gca cgc tcc gtc aac cta caa cat gaa aac aga				384
Ser Thr Ile Val Pro Ala Arg Ser Val Asn Leu Gln His Glu Asn Arg				
	115	120	125	
ccc caa gcc gca ccg act tcg acc ctc gtc caa gtg gaa acc gtc cag				432
Pro Gln Ala Ala Pro Thr Ser Thr Leu Val Gln Val Glu Thr Val Gln				
	130	135	140	
cag cct gcc gaa				444
Gln Pro Ala Glu				
145				
<210> 128				
<211> 148				
<212> PRT				
<213> Neisseria meningitidis				
<400> 128				
Val Asp Ala Ala Ala Thr Leu Leu Thr Tyr Lys Cys Pro Ala Glu Asn				
1	5	10	15	
Arg Pro Asn Thr Lys Lys Ile Gly Asn Phe Ser Tyr Ser Arg Leu Gln				
	20	25	30	
Phe Asp Thr His Arg Ala Ser Ala Arg Phe His Asn His Asn Ser Gly				
	35	40	45	
Val Lys Asn Met Thr Ala Lys Gly Gln Met Leu Gln Asp Pro Phe Leu				
	50	55	60	
Asn Ala Leu Arg Lys Glu His Val Pro Val Ser Ile Tyr Leu Val Asn				
65	70	75	80	
Gly Ile Lys Leu Gln Gly Gln Val Glu Ser Phe Asp Gln Tyr Val Val				
	85	90	95	
Leu Leu Arg Asn Thr Ser Val Thr Gln Met Val Tyr Lys His Ala Ile				

100 105 110  
 Ser Thr Ile Val Pro Ala Arg Ser Val Asn Leu Gln His Glu Asn Arg  
 115 120 125  
 Pro Gln Ala Ala Pro Thr Ser Thr Leu Val Gln Val Glu Thr Val Gln  
 130 135 140  
 Gln Pro Ala Glu  
 145  
  
 <210> 129  
 <211> 1308  
 <212> DNA  
 <213> *Neisseria meningitidis*  
  
 <220>  
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 <222> (1)..(1308)  
  
 <400> 129  
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 Met Tyr Ala Lys Lys Gly Gly Leu Gly Leu Val Lys Ser Arg Arg Phe  
 1 5 10 15  
  
 gca cct ctt ttc gct acg cag ttt ctc ggc gcg ttc aac gac aat gtg 96  
 Ala Pro Leu Phe Ala Thr Gln Phe Leu Gly Ala Phe Asn Asp Asn Val  
 20 25 30  
  
 ttc aaa acc gcg ctg ttt gtg atg att ggg ttt tac ggt ttg ggg caa 144  
 Phe Lys Thr Ala Leu Phe Val Met Ile Gly Phe Tyr Gly Leu Gly Gln  
 35 40 45  
  
 aac ggc ttc ctg cct gcc gga cag atg ttg aac ttg ggc gcg ttg ctg 192  
 Asn Gly Phe Leu Pro Ala Gly Gln Met Leu Asn Leu Gly Ala Leu Leu  
 50 55 60  
  
 ttt att ttg ccg tat ttc ctg ttt tcc tcg ctg tcg ggg cag ttg ggt 240  
 Phe Ile Leu Pro Tyr Phe Leu Phe Ser Ser Leu Ser Gly Gln Leu Gly  
 65 70 75 80  
  
 aac aaa ttc gac aag gcc gtt ttg gcg cgt tgg gcc aag gtg ctg gaa 288  
 Asn Lys Phe Asp Lys Ala Val Leu Ala Arg Trp Ala Lys Val Leu Glu  
 85 90 95  
  
 atg atc att atg gcg gtg gcg gca tac ggg ttt tat atc cgg tct gcc 336

Met	Ile	Ile	Met	Ala	Val	Ala	Ala	Tyr	Gly	Phe	Tyr	Ile	Arg	Ser	Ala		
			100					105					110				
ccg	ctg	ctt	ttg	gcg	tgt	ctg	ttt	tgc	atg	ggc	gcg	caa	tcg	acg	ctg	384	
Pro	Leu	Leu	Leu	Ala	Cys	Leu	Phe	Cys	Met	Gly	Ala	Gln	Ser	Thr	Leu		
			115				120					125					
ttc	ggg	ccg	ctg	aaa	tac	gcc	atc	ctg	ccc	gat	tat	ctc	gac	gac	aaa	432	
Phe	Gly	Pro	Leu	Lys	Tyr	Ala	Ile	Leu	Pro	Asp	Tyr	Leu	Asp	Asp	Lys		
	130					135				140							
gag	ttg	atg	atg	ggc	aac	agc	ctg	att	gaa	tcg	ggt	acg	ttt	gtc	gcc	480	
Glu	Leu	Met	Met	Gly	Asn	Ser	Leu	Ile	Glu	Ser	Gly	Thr	Phe	Val	Ala		
145					150					155					160		
atc	ctg	ttc	ggt	cag	ata	ctg	ggg	act	gcg	gtg	gca	ggt	gta	ccg	cct	528	
Ile	Leu	Phe	Gly	Gln	Ile	Leu	Gly	Thr	Ala	Val	Ala	Gly	Val	Pro	Pro		
				165				170						175			
tat	att	gtc	ggg	ata	ctg	gtt	ttg	ctg	gtc	gcc	gta	gga	ggc	acg	gtc	576	
Tyr	Ile	Val	Gly	Ile	Leu	Val	Leu	Leu	Val	Ala	Val	Gly	Gly	Thr	Val		
			180				185						190				
ggc	agc	ctg	ttt	atg	ccg	tcc	gta	ccc	gcc	aag	gct	gcc	gat	aca	caa	624	
Gly	Ser	Leu	Phe	Met	Pro	Ser	Val	Pro	Ala	Lys	Ala	Ala	Asp	Thr	Gln		
			195				200					205					
att	gag	tgg	aat	att	gtc	cgg	ggt	aca	aaa	tcc	ctg	ctg	cgt	gaa	acg	672	
Ile	Glu	Trp	Asn	Ile	Val	Arg	Gly	Thr	Lys	Ser	Leu	Leu	Arg	Glu	Thr		
	210					215					220						
gtg	cgg	cac	aag	ccc	gtt	ttt	acc	gcc	att	atc	ggt	att	tcg	tgg	ttt	720	
Val	Arg	His	Lys	Pro	Val	Phe	Thr	Ala	Ile	Ile	Gly	Ile	Ser	Trp	Phe		
225					230					235					240		
tgg	ttt	gtc	ggc	gcg	gtt	tat	acc	acg	caa	ctg	ccg	acc	ttt	acc	caa	768	
Trp	Phe	Val	Gly	Ala	Val	Tyr	Thr	Thr	Gln	Leu	Pro	Thr	Phe	Thr	Gln		
				245					250					255			
atc	cat	cta	ggc	ggc	aac	gac	aat	gtt	ttc	aac	ctg	atg	ctt	gcc	ctg	816	
Ile	His	Leu	Gly	Gly	Asn	Asp	Asn	Val	Phe	Asn	Leu	Met	Leu	Ala	Leu		
			260					265					270				
ttt	tcc	atc	ggt	att	gcc	gcc	ggt	tcg	gta	ctg	tgt	gcc	aag	ttc	agc	864	
Phe	Ser	Ile	Gly	Ile	Ala	Ala	Gly	Ser	Val	Leu	Cys	Ala	Lys	Phe	Ser		
			275				280					285					
agg	gaa	cgg	ctg	agg	ttg	gct	tgg	gta	acg	gtt	ggt	gcg	ttg	ggt	ttg	912	

Arg Glu Arg Leu Arg Leu Ala Trp Val Thr Val Gly Ala Leu Gly Leu  
 290 295 300

acg gtt tgc ggc ttg gtt ttg gtg tgg ctg acg cac gga cac cgt ttt 960  
 Thr Val Cys Gly Leu Val Leu Val Trp Leu Thr His Gly His Arg Phe  
 305 310 315 320

gaa ggg ctg aac ggc att ttt tgg ttt tta tcg caa gga tgg gca tat 1008  
 Glu Gly Leu Asn Gly Ile Phe Trp Phe Leu Ser Gln Gly Trp Ala Tyr  
 325 330 335

ccc gtg atg gcg gtg atg acg ctg atc ggc ttt ttc ggc gga ttt ttc 1056  
 Pro Val Met Ala Val Met Thr Leu Ile Gly Phe Phe Gly Gly Phe Phe  
 340 345 350

tcc gtt ccg ctc tat acc tgg ctg caa acc gcc agt agc gag act ttc 1104  
 Ser Val Pro Leu Tyr Thr Trp Leu Gln Thr Ala Ser Ser Glu Thr Phe  
 355 360 365

cgc gcc cgc gcc gtt gcc gcc aac aat atc gtt aac ggt att ttt atg 1152  
 Arg Ala Arg Ala Val Ala Ala Asn Asn Ile Val Asn Gly Ile Phe Met  
 370 375 380

gtt tcc gct gcc gtt ttg agc gcg gtg ttg ctg ttt ttg ttt gac agc 1200  
 Val Ser Ala Ala Val Leu Ser Ala Val Leu Leu Phe Leu Phe Asp Ser  
 385 390 395 400

att tcc ttg ttg tat ctg att gtc gct ttg ggc aat att ccg ttg tcg 1248  
 Ile Ser Leu Leu Tyr Leu Ile Val Ala Leu Gly Asn Ile Pro Leu Ser  
 405 410 415

gta ttt ttg att aag cgc gaa agg cgg ttt tta ggc gcg gcg gca atc 1296  
 Val Phe Leu Ile Lys Arg Glu Arg Arg Phe Leu Gly Ala Ala Ala Ile  
 420 425 430

agg aaa aaa cct 1308  
 Arg Lys Lys Pro  
 435

&lt;210&gt; 130

&lt;211&gt; 436

&lt;212&gt; PRT

&lt;213&gt; Neisseria meningitidis

&lt;400&gt; 130

Met Tyr Ala Lys Lys Gly Gly Leu Gly Leu Val Lys Ser Arg Arg Phe  
 1 5 10 15

Ala Pro Leu Phe Ala Thr Gln Phe Leu Gly Ala Phe Asn Asp Asn Val  
 20 25 30  
 Phe Lys Thr Ala Leu Phe Val Met Ile Gly Phe Tyr Gly Leu Gly Gln  
 35 40 45  
 Asn Gly Phe Leu Pro Ala Gly Gln Met Leu Asn Leu Gly Ala Leu Leu  
 50 55 60  
 Phe Ile Leu Pro Tyr Phe Leu Phe Ser Ser Leu Ser Gly Gln Leu Gly  
 65 70 75 80  
 Asn Lys Phe Asp Lys Ala Val Leu Ala Arg Trp Ala Lys Val Leu Glu  
 85 90 95  
 Met Ile Ile Met Ala Val Ala Ala Tyr Gly Phe Tyr Ile Arg Ser Ala  
 100 105 110  
 Pro Leu Leu Leu Ala Cys Leu Phe Cys Met Gly Ala Gln Ser Thr Leu  
 115 120 125  
 Phe Gly Pro Leu Lys Tyr Ala Ile Leu Pro Asp Tyr Leu Asp Asp Lys  
 130 135 140  
 Glu Leu Met Met Gly Asn Ser Leu Ile Glu Ser Gly Thr Phe Val Ala  
 145 150 155 160  
 Ile Leu Phe Gly Gln Ile Leu Gly Thr Ala Val Ala Gly Val Pro Pro  
 165 170 175  
 Tyr Ile Val Gly Ile Leu Val Leu Leu Val Ala Val Gly Gly Thr Val  
 180 185 190  
 Gly Ser Leu Phe Met Pro Ser Val Pro Ala Lys Ala Ala Asp Thr Gln  
 195 200 205  
 Ile Glu Trp Asn Ile Val Arg Gly Thr Lys Ser Leu Leu Arg Glu Thr  
 210 215 220  
 Val Arg His Lys Pro Val Phe Thr Ala Ile Ile Gly Ile Ser Trp Phe  
 225 230 235 240  
 Trp Phe Val Gly Ala Val Tyr Thr Thr Gln Leu Pro Thr Phe Thr Gln  
 245 250 255  
 Ile His Leu Gly Gly Asn Asp Asn Val Phe Asn Leu Met Leu Ala Leu  
 260 265 270

Phe Ser Ile Gly Ile Ala Ala Gly Ser Val Leu Cys Ala Lys Phe Ser  
 275 280 285

Arg Glu Arg Leu Arg Leu Ala Trp Val Thr Val Gly Ala Leu Gly Leu  
 290 295 300

Thr Val Cys Gly Leu Val Leu Val Trp Leu Thr His Gly His Arg Phe  
 305 310 315 320

Glu Gly Leu Asn Gly Ile Phe Trp Phe Leu Ser Gln Gly Trp Ala Tyr  
 325 330 335

Pro Val Met Ala Val Met Thr Leu Ile Gly Phe Phe Gly Gly Phe Phe  
 340 345 350

Ser Val Pro Leu Tyr Thr Trp Leu Gln Thr Ala Ser Ser Glu Thr Phe  
 355 360 365

Arg Ala Arg Ala Val Ala Ala Asn Asn Ile Val Asn Gly Ile Phe Met  
 370 375 380

Val Ser Ala Ala Val Leu Ser Ala Val Leu Leu Phe Leu Phe Asp Ser  
 385 390 395 400

Ile Ser Leu Leu Tyr Leu Ile Val Ala Leu Gly Asn Ile Pro Leu Ser  
 405 410 415

Val Phe Leu Ile Lys Arg Glu Arg Arg Phe Leu Gly Ala Ala Ala Ile  
 420 425 430

Arg Lys Lys Pro  
 435

<210> 131

<211> 876

<212> DNA

<213> Neisseria meningitidis

<220>

<221> CDS

<222> (1)..(876)

<400> 131

atg aat tac gca aaa gaa atc aat gcg tta aat aac agc ctt tcc gat 48  
 Met Asn Tyr Ala Lys Glu Ile Asn Ala Leu Asn Asn Ser Leu Ser Asp



1	5	10	15	
ttg aaa ggc gac atc aac gtt tgc ttt gaa ttt ttt cca ccg aaa aac				96
Leu Lys Gly Asp Ile Asn Val Ser Phe Glu Phe Phe Pro Pro Lys Asn				
20		25	30	
gag caa atg gaa acg atg ctg tgg gat tcc atc cac cgt ctg caa acc				144
Glu Gln Met Glu Thr Met Leu Trp Asp Ser Ile His Arg Leu Gln Thr				
35		40	45	
ctg cat ccc aag ttc gta tcc gta acc tac ggc gca aac tcc ggc gaa				192
Leu His Pro Lys Phe Val Ser Val Thr Tyr Gly Ala Asn Ser Gly Glu				
50		55	60	
cgc gac cgc acg cac ggc atc gtc aaa cgc atc aaa cag gaa acc ggc				240
Arg Asp Arg Thr His Gly Ile Val Lys Arg Ile Lys Gln Glu Thr Gly				
65		70	75	80
ttg gaa gca gca ccg cac ctg acc ggc atc gac gca tcc ccc gac gaa				288
Leu Glu Ala Ala Pro His Leu Thr Gly Ile Asp Ala Ser Pro Asp Glu				
85		90	95	
ttg cgc caa atc gcc aaa gac tat tgg gac agc ggc atc cgc cgc att				336
Leu Arg Gln Ile Ala Lys Asp Tyr Trp Asp Ser Gly Ile Arg Arg Ile				
100		105	110	
gtc gcc ctg cgt ggc gac gag ccg ccc ggt tat gag aaa aaa ccg ttt				384
Val Ala Leu Arg Gly Asp Glu Pro Pro Gly Tyr Glu Lys Lys Pro Phe				
115		120	125	
tac gcc gaa gac ttg gtt aag cta tta cgc tcc gtc gcc gac ttc gac				432
Tyr Ala Glu Asp Leu Val Lys Leu Leu Arg Ser Val Ala Asp Phe Asp				
130		135	140	
atc tct gtg gcg gca tat ccc gaa gtg cat ccc gaa gcc aaa tcc gca				480
Ile Ser Val Ala Ala Tyr Pro Glu Val His Pro Glu Ala Lys Ser Ala				
145		150	155	160
caa gcc gat ctg att aat ctg aag cgc aaa atc gat gcg ggt gca aac				528
Gln Ala Asp Leu Ile Asn Leu Lys Arg Lys Ile Asp Ala Gly Ala Asn				
165		170	175	
cac gtc atc acc caa ttt ttc ttt gac gta gaa cgc tac ctg cgc ttc				576
His Val Ile Thr Gln Phe Phe Phe Asp Val Glu Arg Tyr Leu Arg Phe				
180		185	190	
cgc gac cgc tgc gtg atg ttg ggt atc gat gtg gaa atc gtc cct ggt				624
Arg Asp Arg Cys Val Met Leu Gly Ile Asp Val Glu Ile Val Pro Gly				

	195						200				205						
att ttg cct gtt acc aac ttc aag cag ctg gcc aaa atg gcg caa gta																	672
Ile Leu Pro Val Thr Asn Phe Lys Gln Leu Gly Lys Met Ala Gln Val																	
210							215				220						
acc aac gtc aaa atc cca agc tgg ctg tcg caa atg tat gaa ggt ttg																	720
Thr Asn Val Lys Ile Pro Ser Trp Leu Ser Gln Met Tyr Glu Gly Leu																	
225	230						235				240						
gac gac gac caa gcc acg cgc aac ctg gtc gcc gcc agt atc gcc atc																	768
Asp Asp Asp Gln Gly Thr Arg Asn Leu Val Ala Ala Ser Ile Ala Ile																	
245							250				255						
gat atg gtc aaa gtc ctg tcc cgc gaa gcc gtg aaa gat ttc cac ttc																	816
Asp Met Val Lys Val Leu Ser Arg Glu Gly Val Lys Asp Phe His Phe																	
260							265				270						
tac acg ctg aac cgc agc gag ctg act tac gcc atc tgc cat att tta																	864
Tyr Thr Leu Asn Arg Ser Glu Leu Thr Tyr Ala Ile Cys His Ile Leu																	
275							280				285						
ggc gtg cgc cct																	876
Gly Val Arg Pro																	
290																	

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<210> 132
<211> 292
<212> PRT
<213> Neisseria meningitidis
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<400> 132

Met Asn Tyr Ala Lys Glu Ile Asn Ala Leu Asn Asn Ser Leu Ser Asp  
1 5 10 15

Leu Lys Gly Asp Ile Asn Val Ser Phe Glu Phe Phe Pro Pro Lys Asn  
20 25 30

Glu Gln Met Glu Thr Met Leu Trp Asp Ser Ile His Arg Leu Gln Thr  
35 40 45

Leu His Pro Lys Phe Val Ser Val Thr Tyr Gly Ala Asn Ser Gly Glu  
50 55 60

Arg Asp Arg Thr His Gly Ile Val Lys Arg Ile Lys Gln Glu Thr Gly  
65 70 75 80

Leu Glu Ala Ala Pro His Leu Thr Gly Ile Asp Ala Ser Pro Asp Glu  
                             85                            90                            95

Leu Arg Gln Ile Ala Lys Asp Tyr Trp Asp Ser Gly Ile Arg Arg Ile  
                             100                            105                            110

Val Ala Leu Arg Gly Asp Glu Pro Pro Gly Tyr Glu Lys Lys Pro Phe  
                             115                            120                            125

Tyr Ala Glu Asp Leu Val Lys Leu Leu Arg Ser Val Ala Asp Phe Asp  
                             130                            135                            140

Ile Ser Val Ala Ala Tyr Pro Glu Val His Pro Glu Ala Lys Ser Ala  
 145                            150                            155                            160

Gln Ala Asp Leu Ile Asn Leu Lys Arg Lys Ile Asp Ala Gly Ala Asn  
                             165                            170                            175

His Val Ile Thr Gln Phe Phe Phe Asp Val Glu Arg Tyr Leu Arg Phe  
                             180                            185                            190

Arg Asp Arg Cys Val Met Leu Gly Ile Asp Val Glu Ile Val Pro Gly  
                             195                            200                            205

Ile Leu Pro Val Thr Asn Phe Lys Gln Leu Gly Lys Met Ala Gln Val  
                             210                            215                            220

Thr Asn Val Lys Ile Pro Ser Trp Leu Ser Gln Met Tyr Glu Gly Leu  
 225                            230                            235                            240

Asp Asp Asp Gln Gly Thr Arg Asn Leu Val Ala Ala Ser Ile Ala Ile  
                             245                            250                            255

Asp Met Val Lys Val Leu Ser Arg Glu Gly Val Lys Asp Phe His Phe  
                             260                            265                            270

Tyr Thr Leu Asn Arg Ser Glu Leu Thr Tyr Ala Ile Cys His Ile Leu  
                             275                            280                            285

Gly Val Arg Pro  
                             290

<210> 133

<211> 1371

<212> DNA

<213> Neisseria meningitidis

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(1371)

&lt;400&gt; 133

atg agt aat cca ttt tcc tct tta ggt ttg ggt acg gaa ctc gtt tcc	48
Met Ser Asn Pro Phe Ser Ser Leu Gly Leu Gly Thr Glu Leu Val Ser	
1 5 10 15	
 gca ctg acc gcg caa ggt tac gaa aac ccg aca ccc atc caa gcc gcc	96
Ala Leu Thr Ala Gln Gly Tyr Glu Asn Pro Thr Pro Ile Gln Ala Ala	
20 25 30	
 gcc att ccc aaa gca ctc gcc ggt cat gat ttg cta gcc gcc gcg caa	144
Ala Ile Pro Lys Ala Leu Ala Gly His Asp Leu Leu Ala Ala Ala Gln	
35 40 45	
 acc ggc aca ggc aaa acc gcc gcc ttt atg ctg ccc agt ctg gaa cgc	192
Thr Gly Thr Gly Lys Thr Ala Ala Phe Met Leu Pro Ser Leu Glu Arg	
50 55 60	
 ctc aaa cgt tac gcc acc gcc agc acc tcg ccc gcg atg cac ccc gtg	240
Leu Lys Arg Tyr Ala Thr Ala Ser Thr Ser Pro Ala Met His Pro Val	
65 70 75 80	
 cgt atg ctc gtc ctc acc ccc acg cgc gaa ctt gcc gac caa atc gac	288
Arg Met Leu Val Leu Thr Pro Thr Arg Glu Leu Ala Asp Gln Ile Asp	
85 90 95	
 caa aac gtg cag ggc tac atc aaa aac ctg ccg ctg cgc cac acc gtc	336
Gln Asn Val Gln Gly Tyr Ile Lys Asn Leu Pro Leu Arg His Thr Val	
100 105 110	
 ttg ttc ggc ggt atg aat atg gac aaa cag acc gcc gac ctg cgt gcc	384
Leu Phe Gly Gly Met Asn Met Asp Lys Gln Thr Ala Asp Leu Arg Ala	
115 120 125	
 ggc tgc gaa atc gtc gtc gcc acc gtc gga cgg ctg ctc gac cac gtg	432
Gly Cys Glu Ile Val Val Ala Thr Val Gly Arg Leu Leu Asp His Val	
130 135 140	
 aaa cag aaa aac atc cat ttg aac aaa gtc gaa atc gtc gtt ttg gac	480
Lys Gln Lys Asn Ile His Leu Asn Lys Val Glu Ile Val Val Leu Asp	
145 150 155 160	
 gaa gcc gac cgt atg ctg gat atg ggt ttt atc gac gac atc cgc aaa	528
Glu Ala Asp Arg Met Leu Asp Met Gly Phe Ile Asp Asp Ile Arg Lys	

	165	170	175	
atc atg cag atg ctg ccc cgc caa cgc caa acc ctg ctc ttt tcc gcc				576
Ile Met Gln Met Leu Pro Arg Gln Arg Gln Thr Leu Leu Phe Ser Ala				
	180	185	190	
acc ttc tcc gcc ccg ata cgc aaa ctg gcg caa gac ttc atg aac gcg				624
Thr Phe Ser Ala Pro Ile Arg Lys Leu Ala Gln Asp Phe Met Asn Ala				
	195	200	205	
ccc gaa acc gtc gaa gtc gcc gcg caa gac acc acc aac gcc aac gtc				672
Pro Glu Thr Val Glu Val Ala Ala Gln Asp Thr Thr Asn Ala Asn Val				
	210	215	220	
gag cag cac atc atc gcc gtc gat acc att cag aag cgc aac ctg ctc				720
Glu Gln His Ile Ile Ala Val Asp Thr Ile Gln Lys Arg Asn Leu Leu				
	225	230	235	240
gaa cgg ctg att gtc gat ttg cat atg aac cag gtc atc gtg ttc tgc				768
Glu Arg Leu Ile Val Asp Leu His Met Asn Gln Val Ile Val Phe Cys				
	245	250	255	
aaa acc aaa caa agc gtc gac cgc gta acg cgc gaa ctg gtg cgc cgc				816
Lys Thr Lys Gln Ser Val Asp Arg Val Thr Arg Glu Leu Val Arg Arg				
	260	265	270	
aac ctg tcc gca cag gcg ata cac ggc gac cgt tcc caa caa agc cgg				864
Asn Leu Ser Ala Gln Ala Ile His Gly Asp Arg Ser Gln Gln Ser Arg				
	275	280	285	
ctc gaa aca ctc aac gcc ttc aaa gac ggc aac ctg cgc gtc ctc gtc				912
Leu Glu Thr Leu Asn Ala Phe Lys Asp Gly Asn Leu Arg Val Leu Val				
	290	295	300	
gcc acc gat atc gcc gcg cgg ggg ctg gat att gcc gaa ctg ccc ttc				960
Ala Thr Asp Ile Ala Ala Arg Gly Leu Asp Ile Ala Glu Leu Pro Phe				
	305	310	315	320
gtc atc aat tac gaa atg ccc gcc cag ccc gaa gac tac gtc cac cgc				1008
Val Ile Asn Tyr Glu Met Pro Ala Gln Pro Glu Asp Tyr Val His Arg				
	325	330	335	
atc ggg cgc acg ggg cgc gcg ggc gcg gac ggc gtg gcg att tcc ctg				1056
Ile Gly Arg Thr Gly Arg Ala Gly Ala Asp Gly Val Ala Ile Ser Leu				
	340	345	350	
atg gac gaa tcc gaa cag aaa atg ttt gaa tcc att aaa gag ctg acc				1104
Met Asp Glu Ser Glu Gln Lys Met Phe Glu Ser Ile Lys Glu Leu Thr				

355	360	365	
ggc aac aag ctg ctc atc gag cgc atc gag ggc ttc gag ccg caa tgg			1152
Gly Asn Lys Leu Leu Ile Glu Arg Ile Glu Gly Phe Glu Pro Gln Trp			
370	375	380	
tgg gaa cag ggc ggc gca aaa ccg gaa aaa ccc gaa atg cgc gaa cca			1200
Trp Glu Gln Gly Gly Ala Lys Pro Glu Lys Pro Glu Met Arg Glu Pro			
385	390	395	400
aga caa cgc aac cgc tac gaa tcc gcc aaa gcg caa cgc gaa aaa aac			1248
Arg Gln Arg Asn Arg Tyr Glu Ser Ala Lys Ala Gln Arg Glu Lys Asn			
405	410	415	
acc cgg ccg gaa aat gcg gca aac gat gcg ggc gcg gct tgc gga aaa			1296
Thr Arg Pro Glu Asn Ala Ala Asn Asp Ala Gly Ala Ala Cys Gly Lys			
420	425	430	
att gcc gga cgc agc cgc cga agc cgc ccg gaa cac ccg acg tgc gcc			1344
Ile Ala Gly Arg Ser Arg Arg Ser Arg Arg Glu His Arg Thr Cys Ala			
435	440	445	
ctg ctc caa ccg cgt tac ggc gta aaa			1371
Leu Leu Gln Pro Arg Tyr Gly Val Lys			
450	455		

&lt;210&gt; 134

&lt;211&gt; 457

&lt;212&gt; PRT

&lt;213&gt; Neisseria meningitidis

&lt;400&gt; 134

Met Ser Asn Pro Phe Ser Ser Leu Gly Leu Gly Thr Glu Leu Val Ser
1 5 10 15

Ala Leu Thr Ala Gln Gly Tyr Glu Asn Pro Thr Pro Ile Gln Ala Ala
20 25 30

Ala Ile Pro Lys Ala Leu Ala Gly His Asp Leu Leu Ala Ala Ala Gln
35 40 45

Thr Gly Thr Gly Lys Thr Ala Ala Phe Met Leu Pro Ser Leu Glu Arg
50 55 60

Leu Lys Arg Tyr Ala Thr Ala Ser Thr Ser Pro Ala Met His Pro Val
65 70 75 80

Arg Met Leu Val Leu Thr Pro Thr Arg Glu Leu Ala Asp Gln Ile Asp	85	90	95
Gln Asn Val Gln Gly Tyr Ile Lys Asn Leu Pro Leu Arg His Thr Val	100	105	110
Leu Phe Gly Gly Met Asn Met Asp Lys Gln Thr Ala Asp Leu Arg Ala	115	120	125
Gly Cys Glu Ile Val Val Ala Thr Val Gly Arg Leu Leu Asp His Val	130	135	140
Lys Gln Lys Asn Ile His Leu Asn Lys Val Glu Ile Val Val Leu Asp	145	150	155
Glu Ala Asp Arg Met Leu Asp Met Gly Phe Ile Asp Asp Ile Arg Lys	165	170	175
Ile Met Gln Met Leu Pro Arg Gln Arg Gln Thr Leu Leu Phe Ser Ala	180	185	190
Thr Phe Ser Ala Pro Ile Arg Lys Leu Ala Gln Asp Phe Met Asn Ala	195	200	205
Pro Glu Thr Val Glu Val Ala Ala Gln Asp Thr Thr Asn Ala Asn Val	210	215	220
Glu Gln His Ile Ile Ala Val Asp Thr Ile Gln Lys Arg Asn Leu Leu	225	230	235
Glu Arg Leu Ile Val Asp Leu His Met Asn Gln Val Ile Val Phe Cys	245	250	255
Lys Thr Lys Gln Ser Val Asp Arg Val Thr Arg Glu Leu Val Arg Arg	260	265	270
Asn Leu Ser Ala Gln Ala Ile His Gly Asp Arg Ser Gln Gln Ser Arg	275	280	285
Leu Glu Thr Leu Asn Ala Phe Lys Asp Gly Asn Leu Arg Val Leu Val	290	295	300
Ala Thr Asp Ile Ala Ala Arg Gly Leu Asp Ile Ala Glu Leu Pro Phe	305	310	315
Val Ile Asn Tyr Glu Met Pro Ala Gln Pro Glu Asp Tyr Val His Arg	325	330	335

Ile Gly Arg Thr Gly Arg Ala Gly Ala Asp Gly Val Ala Ile Ser Leu  
 340 345 350

Met Asp Glu Ser Glu Gln Lys Met Phe Glu Ser Ile Lys Glu Leu Thr  
 355 360 365

Gly Asn Lys Leu Leu Ile Glu Arg Ile Glu Gly Phe Glu Pro Gln Trp  
 370 375 380

Trp Glu Gln Gly Gly Ala Lys Pro Glu Lys Pro Glu Met Arg Glu Pro  
 385 390 395 400

Arg Gln Arg Asn Arg Tyr Glu Ser Ala Lys Ala Gln Arg Glu Lys Asn  
 405 410 415

Thr Arg Pro Glu Asn Ala Ala Asn Asp Ala Gly Ala Ala Cys Gly Lys  
 420 425 430

Ile Ala Gly Arg Ser Arg Arg Ser Arg Arg Glu His Arg Thr Cys Ala  
 435 440 445

Leu Leu Gln Pro Arg Tyr Gly Val Lys  
 450 455

<210> 135

<211> 1374

<212> DNA

<213> Neisseria meningitidis

<220>

<221> CDS

<222> (1)..(1374)

<400> 135

atg aaa cac atc cac att atc ggt atc ggc ggc acg ttt atg ggt ggg 48  
 Met Lys His Ile His Ile Ile Gly Ile Gly Gly Thr Phe Met Gly Gly  
 1 5 10 15

att gcc gcc att gcc aaa gaa gca ggg ttt gaa gtc agc ggt tgc gat 96  
 Ile Ala Ala Ile Ala Lys Glu Ala Gly Phe Glu Val Ser Gly Cys Asp  
 20 25 30

gcg aag atg tat ccg ccg atg agc acc cag ctc gaa gcc ttg ggc ata 144  
 Ala Lys Met Tyr Pro Pro Met Ser Thr Gln Leu Glu Ala Leu Gly Ile  
 35 40 45



ggc gtg tat gaa ggc ttc gac acc gcg cag ttg gac gaa ttt aaa gcc	192
Gly Val Tyr Glu Gly Phe Asp Thr Ala Gln Leu Asp Glu Phe Lys Ala	
50 55 60	
gac gtt tac gtt atc ggc aat gtc gcc aag cgc ggg atg gat gtg gtt	240
Asp Val Tyr Val Ile Gly Asn Val Ala Lys Arg Gly Met Asp Val Val	
65 70 75 80	
gaa gcg att ttg aac cgt ggg ctg cct tat att tcc ggc ccg caa tgg	288
Glu Ala Ile Leu Asn Arg Gly Leu Pro Tyr Ile Ser Gly Pro Gln Trp	
85 90 95	
ctg gct gaa aac gtg ctg cac cat cat tgg gta ctc ggc gtg gcg ggg	336
Leu Ala Glu Asn Val Leu His His His Trp Val Leu Gly Val Ala Gly	
100 105 110	
acg cac ggc aaa acg acc acc gcg tct atg ctc gcg tgg gtt ttg gaa	384
Thr His Gly Lys Thr Thr Thr Ala Ser Met Leu Ala Trp Val Leu Glu	
115 120 125	
tat gcc gga ctc gca ccg ggc ttc ctt atc ggc ggc gta ccg gaa aac	432
Tyr Ala Gly Leu Ala Pro Gly Phe Leu Ile Gly Gly Val Pro Glu Asn	
130 135 140	
ttc agc gtt tcc gcc cgc ctg ccg caa acg ccg cgc caa gac ccg aac	480
Phe Ser Val Ser Ala Arg Leu Pro Gln Thr Pro Arg Gln Asp Pro Asn	
145 150 155 160	
agc caa tcg ccg ttt ttc gtc att gaa gcc gac gaa tac gac acc gcg	528
Ser Gln Ser Pro Phe Phe Val Ile Glu Ala Asp Glu Tyr Asp Thr Ala	
165 170 175	
ttt ttc gac aaa cgc tcc aaa ttc gtg cat tac cgt ccg cgt acc gcc	576
Phe Phe Asp Lys Arg Ser Lys Phe Val His Tyr Arg Pro Arg Thr Ala	
180 185 190	
gtg ttg aac aat ctg gaa ttc gac cac gcc gac atc ttc gcc gat ttg	624
Val Leu Asn Asn Leu Glu Phe Asp His Ala Asp Ile Phe Ala Asp Leu	
195 200 205	
ggc gcg ata cag acc cag ttc cac cac ctc gtg cgt acc gtg ccg tct	672
Gly Ala Ile Gln Thr Gln Phe His His Leu Val Arg Thr Val Pro Ser	
210 215 220	
gaa ggc ctc atc gtc tgc aac gga cgg cag caa agc ctg caa gac act	720
Glu Gly Leu Ile Val Cys Asn Gly Arg Gln Gln Ser Leu Gln Asp Thr	
225 230 235 240	

ttg gac aaa ggc tgc tgg acg ccg gtg gaa aaa ttc ggc acg gaa cac	768
Leu Asp Lys Gly Cys Trp Thr Pro Val Glu Lys Phe Gly Thr Glu His	
245 250 255	
ggc tgg cag gcc ggc gaa gcc aat gcc gat ggc tcg ttc gac gtg ttg	816
Gly Trp Gln Ala Gly Glu Ala Asn Ala Asp Gly Ser Phe Asp Val Leu	
260 265 270	
ctt gac ggc aaa aaa gcc gga cac gtc gct tgg agt ttg atg ggc gga	864
Leu Asp Gly Lys Lys Ala Gly His Val Ala Trp Ser Leu Met Gly Gly	
275 280 285	
cac aac cgc atg aac gcg ctc gcc gtc atc gcc gcc gcg cgt cat gcc	912
His Asn Arg Met Asn Ala Leu Ala Val Ile Ala Ala Ala Arg His Ala	
290 295 300	
gga gtc gac att cag acg gcc tgc gaa gcc ttg agc acg ttt aaa aac	960
Gly Val Asp Ile Gln Thr Ala Cys Glu Ala Leu Ser Thr Phe Lys Asn	
305 310 315 320	
gtc aaa cgc cgc atg gaa atc aaa ggc acg gca aac ggt atc acc gtt	1008
Val Lys Arg Arg Met Glu Ile Lys Gly Thr Ala Asn Gly Ile Thr Val	
325 330 335	
tac gac gac ttc gcc cac cat ccg acc gct atc gaa acc acg att caa	1056
Tyr Asp Asp Phe Ala His His Pro Thr Ala Ile Glu Thr Thr Ile Gln	
340 345 350	
ggt ttg cgc cag cgc gtc ggc ggc gcg cgc atc ctc gcc gtc ctc gaa	1104
Gly Leu Arg Gln Arg Val Gly Gly Ala Arg Ile Leu Ala Val Leu Glu	
355 360 365	
ccg cgt tcc aat acg atg aag ctg ggt acg atg aaa gcc gcc ctg ccc	1152
Pro Arg Ser Asn Thr Met Lys Leu Gly Thr Met Lys Ala Ala Leu Pro	
370 375 380	
gca agc ctc aaa gaa gcc gac caa gtg ttc tgc tac gcc ggc ggc gcg	1200
Ala Ser Leu Lys Glu Ala Asp Gln Val Phe Cys Tyr Ala Gly Gly Ala	
385 390 395 400	
gac tgg gac gtt gcc gaa gcc ctc gcg cct ttg ggc ggc agg ctg cac	1248
Asp Trp Asp Val Ala Glu Ala Leu Ala Pro Leu Gly Gly Arg Leu His	
405 410 415	
gtc ggc aaa gac ttc gat gcc ttc gtt gcc gaa atc gtg aaa aac gcc	1296
Val Gly Lys Asp Phe Asp Ala Phe Val Ala Glu Ile Val Lys Asn Ala	
420 425 430	

gaa gca ggc gac cat att ttg gtg atg agc aac ggc ggt ttc ggc gga 1344  
 Glu Ala Gly Asp His Ile Leu Val Met Ser Asn Gly Gly Phe Gly Gly  
           435                          440                          445

ata cac acc aaa ctg ctg gac gct ttg aga 1374  
 Ile His Thr Lys Leu Leu Asp Ala Leu Arg  
           450                          455

<210> 136

<211> 458

<212> PRT

<213> Neisseria meningitidis

<400> 136

Met Lys His Ile His Ile Ile Gly Ile Gly Gly Thr Phe Met Gly Gly  
       1                          5                          10                          15

Ile Ala Ala Ile Ala Lys Glu Ala Gly Phe Glu Val Ser Gly Cys Asp  
                           20                          25                          30

Ala Lys Met Tyr Pro Pro Met Ser Thr Gln Leu Glu Ala Leu Gly Ile  
           35                          40                          45

Gly Val Tyr Glu Gly Phe Asp Thr Ala Gln Leu Asp Glu Phe Lys Ala  
       50                          55                          60

Asp Val Tyr Val Ile Gly Asn Val Ala Lys Arg Gly Met Asp Val Val  
       65                          70                          75                          80

Glu Ala Ile Leu Asn Arg Gly Leu Pro Tyr Ile Ser Gly Pro Gln Trp  
                           85                          90                          95

Leu Ala Glu Asn Val Leu His His His Trp Val Leu Gly Val Ala Gly  
           100                          105                          110

Thr His Gly Lys Thr Thr Thr Ala Ser Met Leu Ala Trp Val Leu Glu  
           115                          120                          125

Tyr Ala Gly Leu Ala Pro Gly Phe Leu Ile Gly Gly Val Pro Glu Asn  
       130                          135                          140

Phe Ser Val Ser Ala Arg Leu Pro Gln Thr Pro Arg Gln Asp Pro Asn  
       145                          150                          155                          160

Ser Gln Ser Pro Phe Phe Val Ile Glu Ala Asp Glu Tyr Asp Thr Ala  
                           165                          170                          175

Phe Phe Asp Lys Arg Ser Lys Phe Val His Tyr Arg Pro Arg Thr Ala  
 180 185 190  
 Val Leu Asn Asn Leu Glu Phe Asp His Ala Asp Ile Phe Ala Asp Leu  
 195 200 205  
 Gly Ala Ile Gln Thr Gln Phe His His Leu Val Arg Thr Val Pro Ser  
 210 215 220  
 Glu Gly Leu Ile Val Cys Asn Gly Arg Gln Gln Ser Leu Gln Asp Thr  
 225 230 235 240  
 Leu Asp Lys Gly Cys Trp Thr Pro Val Glu Lys Phe Gly Thr Glu His  
 245 250 255  
 Gly Trp Gln Ala Gly Glu Ala Asn Ala Asp Gly Ser Phe Asp Val Leu  
 260 265 270  
 Leu Asp Gly Lys Lys Ala Gly His Val Ala Trp Ser Leu Met Gly Gly  
 275 280 285  
 His Asn Arg Met Asn Ala Leu Ala Val Ile Ala Ala Ala Arg His Ala  
 290 295 300  
 Gly Val Asp Ile Gln Thr Ala Cys Glu Ala Leu Ser Thr Phe Lys Asn  
 305 310 315 320  
 Val Lys Arg Arg Met Glu Ile Lys Gly Thr Ala Asn Gly Ile Thr Val  
 325 330 335  
 Tyr Asp Asp Phe Ala His His Pro Thr Ala Ile Glu Thr Thr Ile Gln  
 340 345 350  
 Gly Leu Arg Gln Arg Val Gly Gly Ala Arg Ile Leu Ala Val Leu Glu  
 355 360 365  
 Pro Arg Ser Asn Thr Met Lys Leu Gly Thr Met Lys Ala Ala Leu Pro  
 370 375 380  
 Ala Ser Leu Lys Glu Ala Asp Gln Val Phe Cys Tyr Ala Gly Gly Ala  
 385 390 395 400  
 Asp Trp Asp Val Ala Glu Ala Leu Ala Pro Leu Gly Gly Arg Leu His  
 405 410 415  
 Val Gly Lys Asp Phe Asp Ala Phe Val Ala Glu Ile Val Lys Asn Ala  
 420 425 430

Glu Ala Gly Asp His Ile Leu Val Met Ser Asn Gly Gly Phe Gly Gly  
 435 440 445

Ile His Thr Lys Leu Leu Asp Ala Leu Arg  
 450 455

<210> 137

<211> 876

<212> DNA

<213> Neisseria meningitidis

<220>

<221> CDS

<222> (1)..(876)

<400> 137

ttg acc gtc cga acg aaa aag acg gcg cat tat acc cta ttc cat tcc 48  
 Leu Thr Val Arg Thr Lys Lys Thr Ala His Tyr Thr Leu Phe His Ser  
 1 5 10 15

gac cga aaa ccg aac atg act act ctc aaa ccc gcc ctg ccc gct tat 96  
 Asp Arg Lys Pro Asn Met Thr Thr Leu Lys Pro Ala Leu Pro Ala Tyr  
 20 25 30

ctg gac aac atc cgc atc atc ctc acg cgc acc agc cat ccc gcc aac 144  
 Leu Asp Asn Ile Arg Ile Ile Leu Thr Arg Thr Ser His Pro Ala Asn  
 35 40 45

atc ggc tct gcc gcg cgc gcg atg aaa aca atg ggt ctg cac aaa ctg 192  
 Ile Gly Ser Ala Ala Arg Ala Met Lys Thr Met Gly Leu His Lys Leu  
 50 55 60

acc atc gtc gcc cca aat ctg atg gca acg ccg atg acg gaa aac ccg 240  
 Thr Ile Val Ala Pro Asn Leu Met Ala Thr Pro Met Thr Glu Asn Pro  
 65 70 75 80

ccc gtg ttt gac ccg gag cat cct caa tcg ttt aaa tta ccg gaa gaa 288  
 Pro Val Phe Asp Pro Glu His Pro Gln Ser Phe Lys Leu Pro Glu Glu  
 85 90 95

agc ttc atc ctc gct tcc ggc gcg gca gac gtt ttg gaa aat gcc acc 336  
 Ser Phe Ile Leu Ala Ser Gly Ala Ala Asp Val Leu Glu Asn Ala Thr  
 100 105 110

att gcc gct tct ttg gac gaa gcc ctt gcc gac acc acc atc gcc tgc 384  
 Ile Ala Ala Ser Leu Asp Glu Ala Leu Ala Asp Thr Thr Ile Ala Cys

115	120	125	
gcc ctg acc agc cgc cgc cgc gaa att act gcg ccg ctg caa acc ccg			432
Ala Leu Thr Ser Arg Arg Arg Glu Ile Thr Ala Pro Leu Gln Thr Pro			
130	135	140	
cgc gat ttg gta tcc gaa tta ctg cag acc gca aac cga ggc gag aaa			480
Arg Asp Leu Val Ser Glu Leu Leu Gln Thr Ala Asn Arg Gly Glu Lys			
145	150	155	160
gtg gca ctg gtt ttc ggc aac gag act ttc ggc ttg agc atc gaa gaa			528
Val Ala Leu Val Phe Gly Asn Glu Thr Phe Gly Leu Ser Ile Glu Glu			
	165	170	175
gtc caa gcc tgc aac cga ctg atg acc atc aac ggc aat ccc gac tat			576
Val Gln Ala Cys Asn Arg Leu Met Thr Ile Asn Gly Asn Pro Asp Tyr			
	180	185	190
ttc tcg ctc aac ctc gcc caa gcc gtg cag gtc gtg tgc tac gaa atc			624
Phe Ser Leu Asn Leu Ala Gln Ala Val Gln Val Val Cys Tyr Glu Ile			
	195	200	205
ttc agc caa acc ggt tcg ccc atg acc cat ctt caa caa gaa gac cac			672
Phe Ser Gln Thr Gly Ser Pro Met Thr His Leu Gln Gln Glu Asp His			
	210	215	220
gct gcg acc cac gag caa atc aaa ggc atg gtc gcc cac atg gaa agc			720
Ala Ala Thr His Glu Gln Ile Lys Gly Met Val Ala His Met Glu Ser			
	225	230	235
gtg atg aac gac atc ggc ttt ttc aac cgc cgc aac ggc gag cgt ctg			768
Val Met Asn Asp Ile Gly Phe Phe Asn Arg Arg Asn Gly Glu Arg Leu			
	245	250	255
atg cgc cgt atg cag agc ctg ttc gga cgc gcc aac acg caa acc gaa			816
Met Arg Arg Met Gln Ser Leu Phe Gly Arg Ala Asn Thr Gln Thr Glu			
	260	265	270
gac atc gat atc ctg cgc ggt ttt ttc aat acc gtc agc cat cgt atc			864
Asp Ile Asp Ile Leu Arg Gly Phe Phe Asn Thr Val Ser His Arg Ile			
	275	280	285
cat aaa aaa gac			876
His Lys Lys Asp			
	290		

&lt;210&gt; 138

&lt;211&gt; 292

&lt;212&gt; PRT

&lt;213&gt; Neisseria meningitidis

&lt;400&gt; 138

Leu Thr Val Arg Thr Lys Lys Thr Ala His Tyr Thr Leu Phe His Ser  
 1 5 10 15

Asp Arg Lys Pro Asn Met Thr Thr Leu Lys Pro Ala Leu Pro Ala Tyr  
 20 25 30

Leu Asp Asn Ile Arg Ile Ile Leu Thr Arg Thr Ser His Pro Ala Asn  
 35 40 45

Ile Gly Ser Ala Ala Arg Ala Met Lys Thr Met Gly Leu His Lys Leu  
 50 55 60

Thr Ile Val Ala Pro Asn Leu Met Ala Thr Pro Met Thr Glu Asn Pro  
 65 70 75 80

Pro Val Phe Asp Pro Glu His Pro Gln Ser Phe Lys Leu Pro Glu Glu  
 85 90 95

Ser Phe Ile Leu Ala Ser Gly Ala Ala Asp Val Leu Glu Asn Ala Thr  
 100 105 110

Ile Ala Ala Ser Leu Asp Glu Ala Leu Ala Asp Thr Thr Ile Ala Cys  
 115 120 125

Ala Leu Thr Ser Arg Arg Arg Glu Ile Thr Ala Pro Leu Gln Thr Pro  
 130 135 140

Arg Asp Leu Val Ser Glu Leu Leu Gln Thr Ala Asn Arg Gly Glu Lys  
 145 150 155 160

Val Ala Leu Val Phe Gly Asn Glu Thr Phe Gly Leu Ser Ile Glu Glu  
 165 170 175

Val Gln Ala Cys Asn Arg Leu Met Thr Ile Asn Gly Asn Pro Asp Tyr  
 180 185 190

Phe Ser Leu Asn Leu Ala Gln Ala Val Gln Val Val Cys Tyr Glu Ile  
 195 200 205

Phe Ser Gln Thr Gly Ser Pro Met Thr His Leu Gln Gln Glu Asp His  
 210 215 220

Ala Ala Thr His Glu Gln Ile Lys Gly Met Val Ala His Met Glu Ser

225                      230                      235                      240  
 Val Met Asn Asp Ile Gly Phe Phe Asn Arg Arg Asn Gly Glu Arg Leu  
                                  245                      250                      255  
 Met Arg Arg Met Gln Ser Leu Phe Gly Arg Ala Asn Thr Gln Thr Glu  
                                  260                      265                      270  
 Asp Ile Asp Ile Leu Arg Gly Phe Phe Asn Thr Val Ser His Arg Ile  
                                  275                      280                      285  
 His Lys Lys Asp  
                                  290

<210> 139  
 <211> 708  
 <212> DNA  
 <213> Neisseria meningitidis

<220>  
 <221> CDS  
 <222> (1) .. (708)

<400> 139  
 ttg cgg cag ctt gga tgt ttg att ggt ttt ttc agt gtt gga atc att    48  
 Leu Arg Gln Leu Gly Cys Leu Ile Gly Phe Phe Ser Val Gly Ile Ile  
   1                      5                      10                      15  
 atg aat ttg aaa tta gtg ttt gaa tcg ggc gat ccc gtc ctg atc ggt    96  
 Met Asn Leu Lys Leu Val Phe Glu Ser Gly Asp Pro Val Leu Ile Gly  
                                  20                      25                      30  
 gtg ttt gtg ttg atg ctg ttg atg agt atc gta acg tgg tgt ttg gtt    144  
 Val Phe Val Leu Met Leu Leu Met Ser Ile Val Thr Trp Cys Leu Val  
                                  35                      40                      45  
 gtc ttg cgc tgc atc aag ctg tat cgg gcg cgc aaa ggg aat gcc gcc    192  
 Val Leu Arg Cys Ile Lys Leu Tyr Arg Ala Arg Lys Gly Asn Ala Ala  
                                  50                      55                      60  
 gtc aaa cgg cat atg cgc gat act ttg tcg ctg aac gac gcg gtc gaa    240  
 Val Lys Arg His Met Arg Asp Thr Leu Ser Leu Asn Asp Ala Val Glu  
                                  65                      70                      75                      80  
 aaa gtg cgc gcc gtc gat gcg cct ttg tcc aaa ctg gcg caa gag gca    288  
 Lys Val Arg Ala Val Asp Ala Pro Leu Ser Lys Leu Ala Gln Glu Ala



85	90	95	
ttg cag tct tac cgc aac tac cgc cga aac gaa gcg tcc gaa ctg gcg			336
Leu Gln Ser Tyr Arg Asn Tyr Arg Arg Asn Glu Ala Ser Glu Leu Ala			
100	105	110	
cag gct ttg ccg ttg aac gag tat ttg gtc att caa atc cgc aac agt			384
Gln Ala Leu Pro Leu Asn Glu Tyr Leu Val Ile Gln Ile Arg Asn Ser			
115	120	125	
atg gcg cag att atg cgc cgg ttt gat tac ggg atg acc gcg ctt gcc			432
Met Ala Gln Ile Met Arg Arg Phe Asp Tyr Gly Met Thr Ala Leu Ala			
130	135	140	
tcc atc ggc gcg acc gcg ccg ttt atc ggg ttg ttc ggc acg gtt tgg			480
Ser Ile Gly Ala Thr Ala Pro Phe Ile Gly Leu Phe Gly Thr Val Trp			
145	150	155	160
ggg att tac cac gcc ctg atc aat atc ggg caa agc ggg cag atg agt			528
Gly Ile Tyr His Ala Leu Ile Asn Ile Gly Gln Ser Gly Gln Met Ser			
165	170	175	
att gcg gcg gtt gcc ggc ccg att ggc gag gca ctg gtg gcg acg gcg			576
Ile Ala Ala Val Ala Gly Pro Ile Gly Glu Ala Leu Val Ala Thr Ala			
180	185	190	
gcg ggt ttg ttc gtg gcg att ccg gcg gtg ttg gca tac aac ttc ctc			624
Ala Gly Leu Phe Val Ala Ile Pro Ala Val Leu Ala Tyr Asn Phe Leu			
195	200	205	
aat cgc ggc aca aaa ata ctg acc cag gat ttg gat gcg atg gcg cac			672
Asn Arg Gly Thr Lys Ile Leu Thr Gln Asp Leu Asp Ala Met Ala His			
210	215	220	
gat ttg cac gtc cgc ctg ctt aat caa aag gat agc			708
Asp Leu His Val Arg Leu Leu Asn Gln Lys Asp Ser			
225	230	235	

&lt;210&gt; 140

&lt;211&gt; 236

&lt;212&gt; PRT

&lt;213&gt; Neisseria meningitidis

&lt;400&gt; 140

Leu Arg Gln Leu Gly Cys Leu Ile Gly Phe Phe Ser Val Gly Ile Ile

1                      5                      10                      15

Met Asn Leu Lys Leu Val Phe Glu Ser Gly Asp Pro Val Leu Ile Gly  
                   20                  25                  30  
 Val Phe Val Leu Met Leu Leu Met Ser Ile Val Thr Trp Cys Leu Val  
                   35                  40                  45  
 Val Leu Arg Cys Ile Lys Leu Tyr Arg Ala Arg Lys Gly Asn Ala Ala  
                   50                  55                  60  
 Val Lys Arg His Met Arg Asp Thr Leu Ser Leu Asn Asp Ala Val Glu  
                   65                  70                  75                  80  
 Lys Val Arg Ala Val Asp Ala Pro Leu Ser Lys Leu Ala Gln Glu Ala  
                   85                  90                  95  
 Leu Gln Ser Tyr Arg Asn Tyr Arg Arg Asn Glu Ala Ser Glu Leu Ala  
                   100                  105                  110  
 Gln Ala Leu Pro Leu Asn Glu Tyr Leu Val Ile Gln Ile Arg Asn Ser  
                   115                  120                  125  
 Met Ala Gln Ile Met Arg Arg Phe Asp Tyr Gly Met Thr Ala Leu Ala  
                   130                  135                  140  
 Ser Ile Gly Ala Thr Ala Pro Phe Ile Gly Leu Phe Gly Thr Val Trp  
                   145                  150                  155                  160  
 Gly Ile Tyr His Ala Leu Ile Asn Ile Gly Gln Ser Gly Gln Met Ser  
                   165                  170                  175  
 Ile Ala Ala Val Ala Gly Pro Ile Gly Glu Ala Leu Val Ala Thr Ala  
                   180                  185                  190  
 Ala Gly Leu Phe Val Ala Ile Pro Ala Val Leu Ala Tyr Asn Phe Leu  
                   195                  200                  205  
 Asn Arg Gly Thr Lys Ile Leu Thr Gln Asp Leu Asp Ala Met Ala His  
                   210                  215                  220  
 Asp Leu His Val Arg Leu Leu Asn Gln Lys Asp Ser  
                   225                  230                  235

&lt;210&gt; 141

&lt;211&gt; 812

&lt;212&gt; DNA

&lt;213&gt; Neisseria meningitidis

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(810)

&lt;400&gt; 141

atg act atg cac gcc ctc ccc cgc tac gcc gtt ttt ggc aac ccc gtc	48
Met Thr Met His Ala Leu Pro Arg Tyr Ala Val Phe Gly Asn Pro Val	
1 5 10 15	
gcc cac agc aaa tcg ccg caa att cat caa caa ttt gcc ctt cag gaa	96
Ala His Ser Lys Ser Pro Gln Ile His Gln Gln Phe Ala Leu Gln Glu	
20 25 30	
ggc gtt gac att gaa tac gaa cgc att tgc gcc gac atc ggc ggt ttc	144
Gly Val Asp Ile Glu Tyr Glu Arg Ile Cys Ala Asp Ile Gly Gly Phe	
35 40 45	
gcg cag gcg gtt tcg aca ttt ttt gaa aca ggc ggt tgc ggg gca aac	192
Ala Gln Ala Val Ser Thr Phe Phe Glu Thr Gly Gly Cys Gly Ala Asn	
50 55 60	
gtt acc gta ccg ttc aag cag gaa gcg ttt cat ctg gcg gac gag cat	240
Val Thr Val Pro Phe Lys Gln Glu Ala Phe His Leu Ala Asp Glu His	
65 70 75 80	
tct gaa cgc gca ttg gct gcc ggc gcg gtc aac acg ctg att ttt ctg	288
Ser Glu Arg Ala Leu Ala Ala Gly Ala Val Asn Thr Leu Ile Phe Leu	
85 90 95	
aaa aac gga aaa ctg cgc ggc gac aat acc gac ggt atc ggt ttg gcc	336
Lys Asn Gly Lys Leu Arg Gly Asp Asn Thr Asp Gly Ile Gly Leu Ala	
100 105 110	
aac gac atc acg cag gtc aaa aac att gcc atc gaa ggc aaa acc atc	384
Asn Asp Ile Thr Gln Val Lys Asn Ile Ala Ile Glu Gly Lys Thr Ile	
115 120 125	
ttg ctt ttg ggc gcg ggc ggc gcg gtg cgc ggc gtg att cct gtt ttg	432
Leu Leu Leu Gly Ala Gly Gly Ala Val Arg Gly Val Ile Pro Val Leu	
130 135 140	
aaa gaa cac cgt cct gcc cgt atc gtc att gcc aac cgt acc cgc gcc	480
Lys Glu His Arg Pro Ala Arg Ile Val Ile Ala Asn Arg Thr Arg Ala	
145 150 155 160	
aaa gcc gag gaa ttg gcg cag ctt ttc ggc att gaa gcc gtc ccg atg	528
Lys Ala Glu Glu Leu Ala Gln Leu Phe Gly Ile Glu Ala Val Pro Met	

	165	170	175	
gcg gat gtg aac ggc ggt ttt gat atc atc atc aac ggc acg tcg ggc				576
Ala Asp Val Asn Gly Gly Phe Asp Ile Ile Ile Asn Gly Thr Ser Gly				
	180	185	190	
ggt cta aac ggt cag att ccc gat att ccg ccc gat att ttt caa aac				624
Gly Leu Asn Gly Gln Ile Pro Asp Ile Pro Pro Asp Ile Phe Gln Asn				
	195	200	205	
tgc gcg ctt gcc tac gat atg gtg tac ggc tgc gcg gca aaa ccg ttt				672
Cys Ala Leu Ala Tyr Asp Met Val Tyr Gly Cys Ala Ala Lys Pro Phe				
	210	215	220	
tta gat ttt gca cga caa tcg ggt gcg aaa aaa act gcc gac gga ctg				720
Leu Asp Phe Ala Arg Gln Ser Gly Ala Lys Lys Thr Ala Asp Gly Leu				
	225	230	235	240
ggt atg cta gtc ggt caa gcg gcg gct tcc tac gcc ctc tgg cgc gga				768
Gly Met Leu Val Gly Gln Ala Ala Ala Ser Tyr Ala Leu Trp Arg Gly				
	245	250	255	
ttt acg ccc gat atc cgc ccc gtt atc gaa tac atg aaa gcc ct				812
Phe Thr Pro Asp Ile Arg Pro Val Ile Glu Tyr Met Lys Ala				
	260	265	270	

&lt;210&gt; 142

&lt;211&gt; 270

&lt;212&gt; PRT

&lt;213&gt; Neisseria meningitidis

&lt;400&gt; 142

Met Thr Met His Ala Leu Pro Arg Tyr Ala Val Phe Gly Asn Pro Val
1 5 10 15

Ala His Ser Lys Ser Pro Gln Ile His Gln Gln Phe Ala Leu Gln Glu
20 25 30

Gly Val Asp Ile Glu Tyr Glu Arg Ile Cys Ala Asp Ile Gly Gly Phe
35 40 45

Ala Gln Ala Val Ser Thr Phe Phe Glu Thr Gly Gly Cys Gly Ala Asn
50 55 60

Val Thr Val Pro Phe Lys Gln Glu Ala Phe His Leu Ala Asp Glu His
65 70 75 80

Ser Glu Arg Ala Leu Ala Ala Gly Ala Val Asn Thr Leu Ile Phe Leu  
                             85                            90                            95  
 Lys Asn Gly Lys Leu Arg Gly Asp Asn Thr Asp Gly Ile Gly Leu Ala  
                             100                            105                            110  
 Asn Asp Ile Thr Gln Val Lys Asn Ile Ala Ile Glu Gly Lys Thr Ile  
                             115                            120                            125  
 Leu Leu Leu Gly Ala Gly Gly Ala Val Arg Gly Val Ile Pro Val Leu  
                             130                            135                            140  
 Lys Glu His Arg Pro Ala Arg Ile Val Ile Ala Asn Arg Thr Arg Ala  
 145                            150                            155                            160  
 Lys Ala Glu Glu Leu Ala Gln Leu Phe Gly Ile Glu Ala Val Pro Met  
                             165                            170                            175  
 Ala Asp Val Asn Gly Gly Phe Asp Ile Ile Ile Asn Gly Thr Ser Gly  
                             180                            185                            190  
 Gly Leu Asn Gly Gln Ile Pro Asp Ile Pro Pro Asp Ile Phe Gln Asn  
                             195                            200                            205  
 Cys Ala Leu Ala Tyr Asp Met Val Tyr Gly Cys Ala Ala Lys Pro Phe  
                             210                            215                            220  
 Leu Asp Phe Ala Arg Gln Ser Gly Ala Lys Lys Thr Ala Asp Gly Leu  
 225                            230                            235                            240  
 Gly Met Leu Val Gly Gln Ala Ala Ala Ser Tyr Ala Leu Trp Arg Gly  
                             245                            250                            255  
 Phe Thr Pro Asp Ile Arg Pro Val Ile Glu Tyr Met Lys Ala  
                             260                            265                            270

&lt;210&gt; 143

&lt;211&gt; 1515

&lt;212&gt; DNA

&lt;213&gt; Neisseria meningitidis

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(1515)

&lt;400&gt; 143

atg ttg tat ttc aga tac ggt ttt ttg gtt gtt tgg tgt gcg gca ggt	48
Met Leu Tyr Phe Arg Tyr Gly Phe Leu Val Val Trp Cys Ala Ala Gly	
1 5 10 15	
ggt tct gcc gcc tat ggg gcg gat gcg ccc gcg att ttg gat gac aag	96
Val Ser Ala Ala Tyr Gly Ala Asp Ala Pro Ala Ile Leu Asp Asp Lys	
20 25 30	
gca ttg ttg cag gtg cag cgg tcg gtg tcg gat aag tgg gcg gaa tcg	144
Ala Leu Leu Gln Val Gln Arg Ser Val Ser Asp Lys Trp Ala Glu Ser	
35 40 45	
gat tgg aaa gtt gac aat gat gcc ccg cgc gtg gtt gac ggg gat ttt	192
Asp Trp Lys Val Asp Asn Asp Ala Pro Arg Val Val Asp Gly Asp Phe	
50 55 60	
ttg ttg gcg cat ccg aaa atg ttg gaa cat agt ttg cgc gac gtg ctc	240
Leu Leu Ala His Pro Lys Met Leu Glu His Ser Leu Arg Asp Val Leu	
65 70 75 80	
aac ggc aat cag gcg gat ttg atc gct tcg ttg gcg gat ttg tat gcc	288
Asn Gly Asn Gln Ala Asp Leu Ile Ala Ser Leu Ala Asp Leu Tyr Ala	
85 90 95	
aag ctg ccg gat tat gac gcg gtt ttg tac ggc agg gcg cgg gct ttg	336
Lys Leu Pro Asp Tyr Asp Ala Val Leu Tyr Gly Arg Ala Arg Ala Leu	
100 105 110	
ctg gcg aaa ttg gcg gga agg ccg gcg gag gcg gtg gcg cgg tat cgg	384
Leu Ala Lys Leu Ala Gly Arg Pro Ala Glu Ala Val Ala Arg Tyr Arg	
115 120 125	
gaa ctg cac ggg gaa aat gcg gca gac gag cgg att ttg ctg gat ttg	432
Glu Leu His Gly Glu Asn Ala Ala Asp Glu Arg Ile Leu Leu Asp Leu	
130 135 140	
gcg gcg gcg gag ttt gac gat ttc ccg ctg aag tcg gca gaa agg cat	480
Ala Ala Ala Glu Phe Asp Asp Phe Arg Leu Lys Ser Ala Glu Arg His	
145 150 155 160	
ttt gcc gag gcg gaa aaa ttg gat ttg ccg gcg ccg gtt ttg gaa aat	528
Phe Ala Glu Ala Glu Lys Leu Asp Leu Pro Ala Pro Val Leu Glu Asn	
165 170 175	
gtg ggg cgt ttt ccg aaa aaa gcg gag ggg ctg acg ggc tgg cgt ttt	576
Val Gly Arg Phe Arg Lys Lys Ala Glu Gly Leu Thr Gly Trp Arg Phe	
180 185 190	

tcg ggc ggc atc agt ccg gcg gtc aat aga aat gcc aat aat gcc gcg	624
Ser Gly Gly Ile Ser Pro Ala Val Asn Arg Asn Ala Asn Asn Ala Ala	
195 200 205	
ccg cag tat tgc cgg caa aac gga ggc cgg cag ata tgc agt gtc agc	672
Pro Gln Tyr Cys Arg Gln Asn Gly Gly Arg Gln Ile Cys Ser Val Ser	
210 215 220	
cgg gcg gag cgg gcg gca ggc ttg aat tat gaa atc gag gcg gaa aaa	720
Arg Ala Glu Arg Ala Ala Gly Leu Asn Tyr Glu Ile Glu Ala Glu Lys	
225 230 235 240	
ctg acg gcg ttg gca gat aat cat tat ttg ttg ttc cgt tcc aat atc	768
Leu Thr Ala Leu Ala Asp Asn His Tyr Leu Leu Phe Arg Ser Asn Ile	
245 250 255	
ggc ggc acg agc tat tat ttc agt aaa aaa tca gct tat gac gac ggg	816
Gly Gly Thr Ser Tyr Tyr Phe Ser Lys Lys Ser Ala Tyr Asp Asp Gly	
260 265 270	
ttc ggc aga gcg tat ttg ggt tgg cag tat aaa aat gca cgg cag acg	864
Phe Gly Arg Ala Tyr Leu Gly Trp Gln Tyr Lys Asn Ala Arg Gln Thr	
275 280 285	
gcg ggg att ttg ccg ttt tat cag gtg cag ttg tcg ggc agc gac ggc	912
Ala Gly Ile Leu Pro Phe Tyr Gln Val Gln Leu Ser Gly Ser Asp Gly	
290 295 300	
ttt gat gcg aaa aca aaa ccg gta aac aac cgc cgc ctg ccg ccg tat	960
Phe Asp Ala Lys Thr Lys Arg Val Asn Asn Arg Arg Leu Pro Pro Tyr	
305 310 315 320	
atg ctg gcg cac gga gtc ggc gtg cag ttg tcc cat act tac cgc cca	1008
Met Leu Ala His Gly Val Gly Val Gln Leu Ser His Thr Tyr Arg Pro	
325 330 335	
aac ccg gga tgg caa ttt tcg gtc gcg ctg gaa cat tac cgc caa cgc	1056
Asn Pro Gly Trp Gln Phe Ser Val Ala Leu Glu His Tyr Arg Gln Arg	
340 345 350	
tac cgc gaa cag gat agg gcg gaa tac aat aac ggt cgg cag gac ggg	1104
Tyr Arg Glu Gln Asp Arg Ala Glu Tyr Asn Asn Gly Arg Gln Asp Gly	
355 360 365	
ttt tat gtt tcg tcg gca aaa cgt ttg ggc gaa tcg gca act gtg ttc	1152
Phe Tyr Val Ser Ser Ala Lys Arg Leu Gly Glu Ser Ala Thr Val Phe	
370 375 380	

ggc ggc tgg cag ttt gtg cgg ttt gtg ccg aaa cgc gaa acg gtg ggc 1200  
 Gly Gly Trp Gln Phe Val Arg Phe Val Pro Lys Arg Glu Thr Val Gly  
 385 390 395 400

ggc gcg gtc aat aat gcc gcc tac cgg cgc aac ggt gtt tat gcc ggc 1248  
 Gly Ala Val Asn Asn Ala Ala Tyr Arg Arg Asn Gly Val Tyr Ala Gly  
 405 410 415

tgg gcg cag gag tgg cgg cag ttg ggc ggt ttg aac agt cgg gtt tcc 1296  
 Trp Ala Gln Glu Trp Arg Gln Leu Gly Gly Leu Asn Ser Arg Val Ser  
 420 425 430

gcg tct tat gcc cgc cgc aac tat aag ggc gtt gcg gct ttc tcg aca 1344  
 Ala Ser Tyr Ala Arg Arg Asn Tyr Lys Gly Val Ala Ala Phe Ser Thr  
 435 440 445

gag gcg caa cgc aac cgc gaa tgg aat gtc tcg ctg gct ttg agc cac 1392  
 Glu Ala Gln Arg Asn Arg Glu Trp Asn Val Ser Leu Ala Leu Ser His  
 450 455 460

gac aag ttg tcg tac aaa ggt atc gtg ccc gcg ttg aat tat cgt ttc 1440  
 Asp Lys Leu Ser Tyr Lys Gly Ile Val Pro Ala Leu Asn Tyr Arg Phe  
 465 470 475 480

ggc agg acg gaa agt aat gtg ccg tat gcg aaa cgc cgc aac agc gag 1488  
 Gly Arg Thr Glu Ser Asn Val Pro Tyr Ala Lys Arg Arg Asn Ser Glu  
 485 490 495

gtg ttt gtg tcg gcg gat tgg cgg ttt 1515  
 Val Phe Val Ser Ala Asp Trp Arg Phe  
 500 505

<210> 144

<211> 505

<212> PRT

<213> Neisseria meningitidis

<400> 144

Met Leu Tyr Phe Arg Tyr Gly Phe Leu Val Val Trp Cys Ala Ala Gly  
 1 5 10 15

Val Ser Ala Ala Tyr Gly Ala Asp Ala Pro Ala Ile Leu Asp Asp Lys  
 20 25 30

Ala Leu Leu Gln Val Gln Arg Ser Val Ser Asp Lys Trp Ala Glu Ser  
 35 40 45



Asp Trp Lys Val Asp Asn Asp Ala Pro Arg Val Val Asp Gly Asp Phe  
 50 55 60

Leu Leu Ala His Pro Lys Met Leu Glu His Ser Leu Arg Asp Val Leu  
 65 70 75 80

Asn Gly Asn Gln Ala Asp Leu Ile Ala Ser Leu Ala Asp Leu Tyr Ala  
 85 90 95

Lys Leu Pro Asp Tyr Asp Ala Val Leu Tyr Gly Arg Ala Arg Ala Leu  
 100 105 110

Leu Ala Lys Leu Ala Gly Arg Pro Ala Glu Ala Val Ala Arg Tyr Arg  
 115 120 125

Glu Leu His Gly Glu Asn Ala Ala Asp Glu Arg Ile Leu Leu Asp Leu  
 130 135 140

Ala Ala Ala Glu Phe Asp Asp Phe Arg Leu Lys Ser Ala Glu Arg His  
 145 150 155 160

Phe Ala Glu Ala Glu Lys Leu Asp Leu Pro Ala Pro Val Leu Glu Asn  
 165 170 175

Val Gly Arg Phe Arg Lys Lys Ala Glu Gly Leu Thr Gly Trp Arg Phe  
 180 185 190

Ser Gly Gly Ile Ser Pro Ala Val Asn Arg Asn Ala Asn Asn Ala Ala  
 195 200 205

Pro Gln Tyr Cys Arg Gln Asn Gly Gly Arg Gln Ile Cys Ser Val Ser  
 210 215 220

Arg Ala Glu Arg Ala Ala Gly Leu Asn Tyr Glu Ile Glu Ala Glu Lys  
 225 230 235 240

Leu Thr Ala Leu Ala Asp Asn His Tyr Leu Leu Phe Arg Ser Asn Ile  
 245 250 255

Gly Gly Thr Ser Tyr Tyr Phe Ser Lys Lys Ser Ala Tyr Asp Asp Gly  
 260 265 270

Phe Gly Arg Ala Tyr Leu Gly Trp Gln Tyr Lys Asn Ala Arg Gln Thr  
 275 280 285

Ala Gly Ile Leu Pro Phe Tyr Gln Val Gln Leu Ser Gly Ser Asp Gly  
 290 295 300

Phe Asp Ala Lys Thr Lys Arg Val Asn Asn Arg Arg Leu Pro Pro Tyr  
 305 310 315 320

Met Leu Ala His Gly Val Gly Val Gln Leu Ser His Thr Tyr Arg Pro  
 325 330 335

Asn Pro Gly Trp Gln Phe Ser Val Ala Leu Glu His Tyr Arg Gln Arg  
 340 345 350

Tyr Arg Glu Gln Asp Arg Ala Glu Tyr Asn Asn Gly Arg Gln Asp Gly  
 355 360 365

Phe Tyr Val Ser Ser Ala Lys Arg Leu Gly Glu Ser Ala Thr Val Phe  
 370 375 380

Gly Gly Trp Gln Phe Val Arg Phe Val Pro Lys Arg Glu Thr Val Gly  
 385 390 395 400

Gly Ala Val Asn Asn Ala Ala Tyr Arg Arg Asn Gly Val Tyr Ala Gly  
 405 410 415

Trp Ala Gln Glu Trp Arg Gln Leu Gly Gly Leu Asn Ser Arg Val Ser  
 420 425 430

Ala Ser Tyr Ala Arg Arg Asn Tyr Lys Gly Val Ala Ala Phe Ser Thr  
 435 440 445

Glu Ala Gln Arg Asn Arg Glu Trp Asn Val Ser Leu Ala Leu Ser His  
 450 455 460

Asp Lys Leu Ser Tyr Lys Gly Ile Val Pro Ala Leu Asn Tyr Arg Phe  
 465 470 475 480

Gly Arg Thr Glu Ser Asn Val Pro Tyr Ala Lys Arg Arg Asn Ser Glu  
 485 490 495

Val Phe Val Ser Ala Asp Trp Arg Phe  
 500 505

<210> 145

<211> 840

<212> DNA

<213> Neisseria meningitidis

<220>

<221> CDS

&lt;222&gt; (1)..(840)

&lt;400&gt; 145

atg gat aaa gaa cga att tta acc ccc gca gtc gtg ttt tcc gtc gca	48
Met Asp Lys Glu Arg Ile Leu Thr Pro Ala Val Val Phe Ser Val Ala	
1 5 10 15	
ctg ctg cat ttg gca atg gtg gca ttg ctc tgg cag gcg cac aag ctg	96
Ileu Leu His Leu Ala Met Val Ala Leu Leu Trp Gln Ala His Lys Leu	
20 25 30	
ccc gtg ata gag tca ggc aat gtt att gaa ttt gtc gat ttg ggc gat	144
Pro Val Ile Glu Ser Gly Asn Val Ile Glu Phe Val Asp Leu Gly Asp	
35 40 45	
ttt ggc gga ggg gac ggc gca ccc gaa ggt gca ggc gcg cct gcc gcg	192
Phe Gly Gly Gly Asp Gly Ala Pro Glu Gly Ala Gly Ala Pro Ala Ala	
50 55 60	
ccc gaa ccg caa ccc gtg ccc gag ccg ccc aaa cct gtc gag ccg ccc	240
Pro Glu Pro Gln Pro Val Pro Glu Pro Pro Lys Pro Val Glu Pro Pro	
65 70 75 80	
aag ccg gtt ttg aag ccg gtg gtt acg aaa aag gcg gat gcg gat att	288
Lys Pro Val Leu Lys Pro Val Val Thr Lys Lys Ala Asp Ala Asp Ile	
85 90 95	
cag cag cct aag gaa gag ccg aaa cct gaa gaa aag ccg aaa ccc gaa	336
Gln Gln Pro Lys Glu Glu Pro Lys Pro Glu Glu Lys Pro Lys Pro Glu	
100 105 110	
gaa aaa ccg aaa cca gag cct aag ccg gaa gcg aag cct gtc ccg aaa	384
Glu Lys Pro Lys Pro Glu Pro Lys Pro Glu Ala Lys Pro Val Pro Lys	
115 120 125	
ccg gcg gaa aaa ccg gtc gag aag ccg tct gaa aaa cct gcc gaa cat	432
Pro Ala Glu Lys Pro Val Glu Lys Pro Ser Glu Lys Pro Ala Glu His	
130 135 140	
ccc ggc aat gct tct gcc aaa gca gac agc gag cag ggc aat ggg gaa	480
Pro Gly Asn Ala Ser Ala Lys Ala Asp Ser Glu Gln Gly Asn Gly Glu	
145 150 155 160	
gat aag gga acc ggt atc aaa gga gac gga acg ggg cgc gga gaa ggc	528
Asp Lys Gly Thr Gly Ile Lys Gly Asp Gly Thr Gly Arg Gly Glu Gly	
165 170 175	
agc ggt aaa ggt agc ggc ggt gtc aaa ggc gaa cac ggg gaa gga gcc	576

Ser Gly Lys Gly Ser Gly Gly Val Lys Gly Glu His Gly Glu Gly Ala  
 180 185 190

ggc agc agc aaa ggc aat cct tta cgc gcc aac ggc agc att ccg cgc 624  
 Gly Ser Ser Lys Gly Asn Pro Leu Arg Ala Asn Gly Ser Ile Pro Arg  
 195 200 205

ccg gct tat ccc acg ctt tct atg gag aat gat gag cag ggt acg gtt 672  
 Pro Ala Tyr Pro Thr Leu Ser Met Glu Asn Asp Glu Gln Gly Thr Val  
 210 215 220

gtt ttg agc gtt ttg gtt tct ccg ggc ggt cat gtt gag tcc gtt aaa 720  
 Val Leu Ser Val Leu Val Ser Pro Gly Gly His Val Glu Ser Val Lys  
 225 230 235 240

atc gtg aaa agc agt ggt ttt tcc cgg ttg gac aat gcg gca cgc aag 768  
 Ile Val Lys Ser Ser Gly Phe Ser Arg Leu Asp Asn Ala Ala Arg Lys  
 245 250 255

gcg gcg caa aac ggg cat ttt caa gcc aat gcc tgg acg gag ttt aaa 816  
 Ala Ala Gln Asn Gly His Phe Gln Ala Asn Ala Trp Thr Glu Phe Lys  
 260 265 270

gtc ccc gtc aag ttt gaa ttg aat 840  
 Val Pro Val Lys Phe Glu Leu Asn  
 275 280

<210> 146  
 <211> 280  
 <212> PRT  
 <213> Neisseria meningitidis

<400> 146  
 Met Asp Lys Glu Arg Ile Leu Thr Pro Ala Val Val Phe Ser Val Ala  
 1 5 10 15

Leu Leu His Leu Ala Met Val Ala Leu Leu Trp Gln Ala His Lys Leu  
 20 25 30

Pro Val Ile Glu Ser Gly Asn Val Ile Glu Phe Val Asp Leu Gly Asp  
 35 40 45

Phe Gly Gly Gly Asp Gly Ala Pro Glu Gly Ala Gly Ala Pro Ala Ala  
 50 55 60

Pro Glu Pro Gln Pro Val Pro Glu Pro Pro Lys Pro Val Glu Pro Pro  
 65 70 75 80

Lys Pro Val Leu Lys Pro Val Val Thr Lys Lys Ala Asp Ala Asp Ile  
                             85                            90                            95  
  
 Gln Gln Pro Lys Glu Glu Pro Lys Pro Glu Glu Lys Pro Lys Pro Glu  
                             100                            105                            110  
  
 Glu Lys Pro Lys Pro Glu Pro Lys Pro Glu Ala Lys Pro Val Pro Lys  
                             115                            120                            125  
  
 Pro Ala Glu Lys Pro Val Glu Lys Pro Ser Glu Lys Pro Ala Glu His  
                             130                            135                            140  
  
 Pro Gly Asn Ala Ser Ala Lys Ala Asp Ser Glu Gln Gly Asn Gly Glu  
 145                            150                            155                            160  
  
 Asp Lys Gly Thr Gly Ile Lys Gly Asp Gly Thr Gly Arg Gly Glu Gly  
                             165                            170                            175  
  
 Ser Gly Lys Gly Ser Gly Gly Val Lys Gly Glu His Gly Glu Gly Ala  
                             180                            185                            190  
  
 Gly Ser Ser Lys Gly Asn Pro Leu Arg Ala Asn Gly Ser Ile Pro Arg  
                             195                            200                            205  
  
 Pro Ala Tyr Pro Thr Leu Ser Met Glu Asn Asp Glu Gln Gly Thr Val  
                             210                            215                            220  
  
 Val Leu Ser Val Leu Val Ser Pro Gly Gly His Val Glu Ser Val Lys  
 225                            230                            235                            240  
  
 Ile Val Lys Ser Ser Gly Phe Ser Arg Leu Asp Asn Ala Ala Arg Lys  
                             245                            250                            255  
  
 Ala Ala Gln Asn Gly His Phe Gln Ala Asn Ala Trp Thr Glu Phe Lys  
                             260                            265                            270  
  
 Val Pro Val Lys Phe Glu Leu Asn  
                             275                            280

&lt;210&gt; 147

&lt;211&gt; 1572

&lt;212&gt; DNA

&lt;213&gt; Neisseria meningitidis

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(1572)

&lt;400&gt; 147

atg ttc aga cgg tat ctt ccg aac aga cag atg aat atg gtt tcc aaa	48
Met Phe Arg Arg Tyr Leu Pro Asn Arg Gln Met Asn Met Val Ser Lys	
1 5 10 15	
ctg gac aaa tac tgg cag cac ccc gcc ctc tac tgg cct ttg ctc atc	96
Leu Asp Lys Tyr Trp Gln His Pro Ala Leu Tyr Trp Pro Leu Leu Ile	
20 25 30	
ctt ttt gcc gcc gcc acc ccc ttt acc ttc gca ccc tac tac cac ttt	144
Leu Phe Ala Ala Ala Thr Pro Phe Thr Phe Ala Pro Tyr Tyr His Phe	
35 40 45	
tgg ctg atg ccc ttg att ttc ggt gcc ttc gtc cgc ctc atc gaa ctg	192
Trp Leu Met Pro Leu Ile Phe Gly Ala Phe Val Arg Leu Ile Glu Leu	
50 55 60	
cgt ccg cgt ttt gct gtc tct tcc gcc tac ctg ttc ggc ctg acc gca	240
Arg Pro Arg Phe Ala Val Ser Ser Ala Tyr Leu Phe Gly Leu Thr Ala	
65 70 75 80	
tac acg aca cag ttc tac tgg ata cac acc gcc ctg cac gac gtt tcc	288
Tyr Thr Thr Gln Phe Tyr Trp Ile His Thr Ala Leu His Asp Val Ser	
85 90 95	
ggc ctg ccc gac ctc tat gcc gta ccg ctg acc ttc cta ctc ccc gcc	336
Gly Leu Pro Asp Leu Tyr Ala Val Pro Leu Thr Phe Leu Leu Pro Ala	
100 105 110	
tac ctt gcc ctt tat ccg gca ctg tgt ttc tgg ctg tgg aaa aaa ttt	384
Tyr Leu Ala Leu Tyr Pro Ala Leu Cys Phe Trp Leu Trp Lys Lys Phe	
115 120 125	
acc ctg cct cgg ggc ata aaa atc ggt ttg gta ctg ccc atc ctg tgg	432
Thr Leu Pro Arg Gly Ile Lys Ile Gly Leu Val Leu Pro Ile Leu Trp	
130 135 140	
aca ctg acc gag ttt gcc cgc gaa cgt ttc ctg acc gga ttc ggc tgg	480
Thr Leu Thr Glu Phe Ala Arg Glu Arg Phe Leu Thr Gly Phe Gly Trp	
145 150 155 160	
ggc gca atc ggc tac tcc caa atc acc ccg gac agc ccg ctc gcc ggc	528
Gly Ala Ile Gly Tyr Ser Gln Ile Thr Pro Asp Ser Pro Leu Ala Gly	
165 170 175	

ttt gcc cca ttt ggc ggc atc cac atg gtt aca ctg gca acc gcc ttt	576
Phe Ala Pro Phe Gly Gly Ile His Met Val Thr Leu Ala Thr Ala Phe	
180 185 190	
ctc ggt gtc tgg ctg gtt ttg gcg agt gat aac acc gca cgt tcg ggc	624
Leu Gly Val Trp Leu Val Leu Ala Ser Asp Asn Thr Ala Arg Ser Gly	
195 200 205	
aaa cgc ctg ctt cca att atc ctg att gcc gcc ctg ctt gcc gca ggc	672
Lys Arg Leu Leu Pro Ile Ile Leu Ile Ala Ala Leu Leu Ala Ala Gly	
210 215 220	
tac acc gcc cga caa acc gac ttc acc cgc ccc gac ggc agc cgc agc	720
Tyr Thr Ala Arg Gln Thr Asp Phe Thr Arg Pro Asp Gly Ser Arg Ser	
225 230 235 240	
acc gtc gcc ctg ctt caa ggc aac atc gac caa acc ctc aaa tgg cgt	768
Thr Val Ala Leu Leu Gln Gly Asn Ile Asp Gln Thr Leu Lys Trp Arg	
245 250 255	
gaa gac caa gtc atc ccg acc ata cag aaa tat tac gaa cag gtc ggc	816
Glu Asp Gln Val Ile Pro Thr Ile Gln Lys Tyr Tyr Glu Gln Val Gly	
260 265 270	
aaa acc act gcc gac atc gtc atc ctg ccc gaa acc gcc atc ccc gtc	864
Lys Thr Thr Ala Asp Ile Val Ile Leu Pro Glu Thr Ala Ile Pro Val	
275 280 285	
atg cgc caa aac ctg ccg gaa aac ata ctg gca aaa ttt gcc gaa cag	912
Met Arg Gln Asn Leu Pro Glu Asn Ile Leu Ala Lys Phe Ala Glu Gln	
290 295 300	
gcg caa aac aac ggc agc gcg ctc gcc gtc ggc atc agc caa tac act	960
Ala Gln Asn Asn Gly Ser Ala Leu Ala Val Gly Ile Ser Gln Tyr Thr	
305 310 315 320	
tcg gac ggc aac ggt tac gaa aac gcc gtc atc aac ctg acc ggt tat	1008
Ser Asp Gly Asn Gly Tyr Glu Asn Ala Val Ile Asn Leu Thr Gly Tyr	
325 330 335	
cag gaa aac aat cag gac ggc atc ccc tac tac gcc aaa aac cac ctc	1056
Gln Glu Asn Asn Gln Asp Gly Ile Pro Tyr Tyr Ala Lys Asn His Leu	
340 345 350	
gtc ccc ttc ggc gaa tac aaa ccg ctg ccc ttc ctg acc acg ccg ctt	1104
Val Pro Phe Gly Glu Tyr Lys Pro Leu Pro Phe Leu Thr Thr Pro Leu	
355 360 365	

tac aaa atg atg aat atg ccc ctt tcc gac ttc cgc aaa ggc ggc ggt 1152  
 Tyr Lys Met Met Asn Met Pro Leu Ser Asp Phe Arg Lys Gly Gly Gly  
 370 375 380

aag caa tcc gcc ctg ctg atg aaa aac caa aaa atc gcc ttc aac atc 1200  
 Lys Gln Ser Ala Leu Leu Met Lys Asn Gln Lys Ile Ala Phe Asn Ile  
 385 390 395 400

tgt tac gaa gac gga ttc ggc gac gaa ctg att gcc gcc gcc aaa gat 1248  
 Cys Tyr Glu Asp Gly Phe Gly Asp Glu Leu Ile Ala Ala Ala Lys Asp  
 405 410 415

gcc aca ctg ctt gcc aat gcc agc aat atg gcg tgg tac gga aaa tcc 1296  
 Ala Thr Leu Leu Ala Asn Ala Ser Asn Met Ala Trp Tyr Gly Lys Ser  
 420 425 430

aac gcc atg tac cag cac ctc caa caa tcg cag gcg cgg gct atg gaa 1344  
 Asn Ala Met Tyr Gln His Leu Gln Gln Ser Gln Ala Arg Ala Met Glu  
 435 440 445

ctc gga cgc tat atg gtc cgt gcc acc aac acc ggc gca acc gcc atc 1392  
 Leu Gly Arg Tyr Met Val Arg Ala Thr Asn Thr Gly Ala Thr Ala Ile  
 450 455 460

atc tcc ccc aaa ggc aac atc atc gcc caa gcc caa ccc gat acg gaa 1440  
 Ile Ser Pro Lys Gly Asn Ile Ile Ala Gln Ala Gln Pro Asp Thr Glu  
 465 470 475 480

acc gta ttg gaa gga cac atc aaa ggc tat gtc ggc gaa acg ccc tat 1488  
 Thr Val Leu Glu Gly His Ile Lys Gly Tyr Val Gly Glu Thr Pro Tyr  
 485 490 495

atg aaa acc ggc agt tca tgg tgg ttg atg ggc ata ttg acc cta gcc 1536  
 Met Lys Thr Gly Ser Ser Trp Trp Leu Met Gly Ile Leu Thr Leu Ala  
 500 505 510

gca ctg att ctt ttc atc ttc cga aac aaa gaa cac 1572  
 Ala Leu Ile Leu Phe Ile Phe Arg Asn Lys Glu His  
 515 520

<210> 148

<211> 524

<212> PRT

<213> Neisseria meningitidis

<400> 148

Met Phe Arg Arg Tyr Leu Pro Asn Arg Gln Met Asn Met Val Ser Lys



1	5	10	15
Leu Asp Lys Tyr Trp Gln His Pro Ala Leu Tyr Trp Pro Leu Leu Ile	20	25	30
Leu Phe Ala Ala Ala Thr Pro Phe Thr Phe Ala Pro Tyr Tyr His Phe	35	40	45
Trp Leu Met Pro Leu Ile Phe Gly Ala Phe Val Arg Leu Ile Glu Leu	50	55	60
Arg Pro Arg Phe Ala Val Ser Ser Ala Tyr Leu Phe Gly Leu Thr Ala	65	70	75
Tyr Thr Thr Gln Phe Tyr Trp Ile His Thr Ala Leu His Asp Val Ser	85	90	95
Gly Leu Pro Asp Leu Tyr Ala Val Pro Leu Thr Phe Leu Leu Pro Ala	100	105	110
Tyr Leu Ala Leu Tyr Pro Ala Leu Cys Phe Trp Leu Trp Lys Lys Phe	115	120	125
Thr Leu Pro Arg Gly Ile Lys Ile Gly Leu Val Leu Pro Ile Leu Trp	130	135	140
Thr Leu Thr Glu Phe Ala Arg Glu Arg Phe Leu Thr Gly Phe Gly Trp	145	150	155
Gly Ala Ile Gly Tyr Ser Gln Ile Thr Pro Asp Ser Pro Leu Ala Gly	165	170	175
Phe Ala Pro Phe Gly Gly Ile His Met Val Thr Leu Ala Thr Ala Phe	180	185	190
Leu Gly Val Trp Leu Val Leu Ala Ser Asp Asn Thr Ala Arg Ser Gly	195	200	205
Lys Arg Leu Leu Pro Ile Ile Leu Ile Ala Ala Leu Leu Ala Ala Gly	210	215	220
Tyr Thr Ala Arg Gln Thr Asp Phe Thr Arg Pro Asp Gly Ser Arg Ser	225	230	235
Thr Val Ala Leu Leu Gln Gly Asn Ile Asp Gln Thr Leu Lys Trp Arg	245	250	255
Glu Asp Gln Val Ile Pro Thr Ile Gln Lys Tyr Tyr Glu Gln Val Gly			

260	265	270
Lys Thr Thr Ala Asp Ile Val Ile Leu Pro Glu Thr Ala Ile Pro Val		
275	280	285
Met Arg Gln Asn Leu Pro Glu Asn Ile Leu Ala Lys Phe Ala Glu Gln		
290	295	300
Ala Gln Asn Asn Gly Ser Ala Leu Ala Val Gly Ile Ser Gln Tyr Thr		
305	310	315
Ser Asp Gly Asn Gly Tyr Glu Asn Ala Val Ile Asn Leu Thr Gly Tyr		
	325	330
		335
Gln Glu Asn Asn Gln Asp Gly Ile Pro Tyr Tyr Ala Lys Asn His Leu		
	340	345
		350
Val Pro Phe Gly Glu Tyr Lys Pro Leu Pro Phe Leu Thr Thr Pro Leu		
	355	360
		365
Tyr Lys Met Met Asn Met Pro Leu Ser Asp Phe Arg Lys Gly Gly Gly		
370	375	380
Lys Gln Ser Ala Leu Leu Met Lys Asn Gln Lys Ile Ala Phe Asn Ile		
385	390	395
		400
Cys Tyr Glu Asp Gly Phe Gly Asp Glu Leu Ile Ala Ala Ala Lys Asp		
	405	410
		415
Ala Thr Leu Leu Ala Asn Ala Ser Asn Met Ala Trp Tyr Gly Lys Ser		
	420	425
		430
Asn Ala Met Tyr Gln His Leu Gln Gln Ser Gln Ala Arg Ala Met Glu		
	435	440
		445
Leu Gly Arg Tyr Met Val Arg Ala Thr Asn Thr Gly Ala Thr Ala Ile		
450	455	460
Ile Ser Pro Lys Gly Asn Ile Ile Ala Gln Ala Gln Pro Asp Thr Glu		
465	470	475
		480
Thr Val Leu Glu Gly His Ile Lys Gly Tyr Val Gly Glu Thr Pro Tyr		
	485	490
		495
Met Lys Thr Gly Ser Ser Trp Trp Leu Met Gly Ile Leu Thr Leu Ala		
	500	505
		510
Ala Leu Ile Leu Phe Ile Phe Arg Asn Lys Glu His		

515

520

&lt;210&gt; 149

&lt;211&gt; 558

&lt;212&gt; DNA

<213> *Neisseria meningitidis*

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(558)

&lt;400&gt; 149

ttg gat ctc tac aaa ctc ggt tac aaa caa cat acc cgt acc gat gcg	48
Leu Asp Leu Tyr Lys Leu Gly Tyr Lys Gln His Thr Arg Thr Asp Ala	
1 5 10 15	

gaa ggc tat atc gag aaa ctg cac att acc ccc gcc aat gcc cat gag	96
Glu Gly Tyr Ile Glu Lys Leu His Ile Thr Pro Ala Asn Ala His Glu	
20 25 30	

tgc aaa cac ctg ccg ccg ttg ttg gaa gga ctg ccc aaa ggt acg acc	144
Cys Lys His Leu Pro Pro Leu Leu Glu Gly Leu Pro Lys Gly Thr Thr	
35 40 45	

gtc tat gcc gac aaa ggc tac gac agt gcg gaa aac cgg caa cat ctg	192
Val Tyr Ala Asp Lys Gly Tyr Asp Ser Ala Glu Asn Arg Gln His Leu	
50 55 60	

gaa gaa cat cag ttg ttg gac ggc att atg cgc aaa gcc tgc cgc aac	240
Glu Glu His Gln Leu Leu Asp Gly Ile Met Arg Lys Ala Cys Arg Asn	
65 70 75 80	

cgt ccg ctg tcg gaa acg caa acc aaa cgc aac cgg tat ttg tcg aag	288
Arg Pro Leu Ser Glu Thr Gln Thr Lys Arg Asn Arg Tyr Leu Ser Lys	
85 90 95	

acc cgt tat agt gga tta aat tta aat cag gac aag gcg acg aag ccg	336
Thr Arg Tyr Ser Gly Leu Asn Leu Asn Gln Asp Lys Ala Thr Lys Pro	
100 105 110	

cag aca gta caa ata gta cgg caa ggc gag gca acg ccg tac tgg ttt	384
Gln Thr Val Gln Ile Val Arg Gln Gly Glu Ala Thr Pro Tyr Trp Phe	
115 120 125	

aaa ttt aat cca cta tat gtg gtc gaa cag agc ttc ggt acg ctg cac	432
Lys Phe Asn Pro Leu Tyr Val Val Glu Gln Ser Phe Gly Thr Leu His	

130 135 140

cgt aaa ttc cgc tat gcg cgg gca gcc tat ttc gga ctg att aaa gtg 480  
 Arg Lys Phe Arg Tyr Ala Arg Ala Ala Tyr Phe Gly Leu Ile Lys Val  
 145 150 155 160

agt gcg caa agc cat ctg aag gcg atg tgt ttg aac ctg ttg aaa gcc 528  
 Ser Ala Gln Ser His Leu Lys Ala Met Cys Leu Asn Leu Leu Lys Ala  
 165 170 175

gcc aac aag cta agt gcg ccc gct gcc gcc 558  
 Ala Asn Lys Leu Ser Ala Pro Ala Ala Ala  
 180 185

&lt;210&gt; 150

&lt;211&gt; 186

&lt;212&gt; PRT

&lt;213&gt; Neisseria meningitidis

&lt;400&gt; 150

Leu Asp Leu Tyr Lys Leu Gly Tyr Lys Gln His Thr Arg Thr Asp Ala  
 1 5 10 15

Glu Gly Tyr Ile Glu Lys Leu His Ile Thr Pro Ala Asn Ala His Glu  
 20 25 30

Cys Lys His Leu Pro Pro Leu Leu Glu Gly Leu Pro Lys Gly Thr Thr  
 35 40 45

Val Tyr Ala Asp Lys Gly Tyr Asp Ser Ala Glu Asn Arg Gln His Leu  
 50 55 60

Glu Glu His Gln Leu Leu Asp Gly Ile Met Arg Lys Ala Cys Arg Asn  
 65 70 75 80

Arg Pro Leu Ser Glu Thr Gln Thr Lys Arg Asn Arg Tyr Leu Ser Lys  
 85 90 95

Thr Arg Tyr Ser Gly Leu Asn Leu Asn Gln Asp Lys Ala Thr Lys Pro  
 100 105 110

Gln Thr Val Gln Ile Val Arg Gln Gly Glu Ala Thr Pro Tyr Trp Phe  
 115 120 125

Lys Phe Asn Pro Leu Tyr Val Val Glu Gln Ser Phe Gly Thr Leu His  
 130 135 140

Arg Lys Phe Arg Tyr Ala Arg Ala Ala Tyr Phe Gly Leu Ile Lys Val  
 145 150 155 160

Ser Ala Gln Ser His Leu Lys Ala Met Cys Leu Asn Leu Leu Lys Ala  
 165 170 175

Ala Asn Lys Leu Ser Ala Pro Ala Ala Ala  
 180 185

<210> 151

<211> 1332

<212> DNA

<213> Neisseria meningitidis

<220>

<221> CDS

<222> (1)..(1332)

<400> 151

atg act gac ctg aac acc ctg ttt gcc aac ctc aaa caa cgc aat ccc 48  
 Met Thr Asp Leu Asn Thr Leu Phe Ala Asn Leu Lys Gln Arg Asn Pro  
 1 5 10 15

aat cag gag ccg ttc cat cag gcg gtt gaa gaa gtc ttc atg agt ctc 96  
 Asn Gln Glu Pro Phe His Gln Ala Val Glu Glu Val Phe Met Ser Leu  
 20 25 30

gat ccg ttt ttg gca aaa aat ccg aaa tac acc cag caa agc ctg ctg 144  
 Asp Pro Phe Leu Ala Lys Asn Pro Lys Tyr Thr Gln Gln Ser Leu Leu  
 35 40 45

gaa cgc atc gtc gaa ccc gaa cgc gtc gtg atg ttc cgc gta acc tgg 192  
 Glu Arg Ile Val Glu Pro Glu Arg Val Val Met Phe Arg Val Thr Trp  
 50 55 60

cag gac gat aaa ggg caa gtc caa gtc aac cgg ggc tac cgc gtg caa 240  
 Gln Asp Asp Lys Gly Gln Val Gln Val Asn Arg Gly Tyr Arg Val Gln  
 65 70 75 80

atg agt tcc gcc atc ggt cct tac aaa ggc ggc ctg cgc ttc cat ccg 288  
 Met Ser Ser Ala Ile Gly Pro Tyr Lys Gly Gly Leu Arg Phe His Pro  
 85 90 95

acc gtc gat ttg ggc gta ttg aaa ttc ctc gct ttt gaa caa gtg ttc 336  
 Thr Val Asp Leu Gly Val Leu Lys Phe Leu Ala Phe Glu Gln Val Phe  
 100 105 110

aaa aac gcc ttg acc acc ctg cct atg ggc ggc ggc aaa ggc ggt tcc	384
Lys Asn Ala Leu Thr Thr Leu Pro Met Gly Gly Gly Lys Gly Gly Ser	
115 120 125	
gac ttc gac ccc aaa ggc aaa tcc gat gcc gaa gta atg cgc ttc tgc	432
Asp Phe Asp Pro Lys Gly Lys Ser Asp Ala Glu Val Met Arg Phe Cys	
130 135 140	
caa gcc ttt atg acc gaa ctc tac cgc cac atc ggc gcg gac acc gat	480
Gln Ala Phe Met Thr Glu Leu Tyr Arg His Ile Gly Ala Asp Thr Asp	
145 150 155 160	
gtt ccg gcc ggc gac atc ggc gta ggc ggg cgc gaa atc ggc tac ctg	528
Val Pro Ala Gly Asp Ile Gly Val Gly Gly Arg Glu Ile Gly Tyr Leu	
165 170 175	
ttc gga caa tac aaa aaa atc cgc aac gag ttt tct tcc gtc ctg acc	576
Phe Gly Gln Tyr Lys Lys Ile Arg Asn Glu Phe Ser Ser Val Leu Thr	
180 185 190	
ggc aaa ggt ttg gaa tgg ggc ggc agc ctc atc cgt ccc gaa gcg acc	624
Gly Lys Gly Leu Glu Trp Gly Gly Ser Leu Ile Arg Pro Glu Ala Thr	
195 200 205	
ggc tac ggc tgc gtc tat ttc gcc caa gcg atg ctg caa acc cgc aac	672
Gly Tyr Gly Cys Val Tyr Phe Ala Gln Ala Met Leu Gln Thr Arg Asn	
210 215 220	
gat agt ttt gaa ggc aaa cgc gtc ctg att tcc ggt tcc ggc aac gtg	720
Asp Ser Phe Glu Gly Lys Arg Val Leu Ile Ser Gly Ser Gly Asn Val	
225 230 235 240	
gcg caa tac gcc gcc gaa aaa gcc atc caa ctg ggc gcg aaa gtg ctg	768
Ala Gln Tyr Ala Ala Glu Lys Ala Ile Gln Leu Gly Ala Lys Val Leu	
245 250 255	
acc gtt tcc gac tcc aac ggc ttc gtc ctc ttc ccc gac agc ggt atg	816
Thr Val Ser Asp Ser Asn Gly Phe Val Leu Phe Pro Asp Ser Gly Met	
260 265 270	
agc gaa gcg caa ctc gcc gcc ttg atc gaa ttg aaa gaa gtc cgc cgc	864
Ser Glu Ala Gln Leu Ala Ala Leu Ile Glu Leu Lys Glu Val Arg Arg	
275 280 285	
gaa cgg gtt gcc acc tac gcc aaa gag caa ggt ctg caa tac ttt gaa	912
Glu Arg Val Ala Thr Tyr Ala Lys Glu Gln Gly Leu Gln Tyr Phe Glu	
290 295 300	

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aac caa aaa ccg tgg ggc gtc gcc gcc gaa atc gcc ctg ccc tgc gcg      960
Asn Gln Lys Pro Trp Gly Val Ala Ala Glu Ile Ala Leu Pro Cys Ala
305                      310                      315                      320

acc cag aac gaa ttg gac gaa gaa gcc gcc aaa acc ctg ttg gca aac      1008
Thr Gln Asn Glu Leu Asp Glu Glu Ala Ala Lys Thr Leu Leu Ala Asn
                      325                      330                      335

ggc tgc tac gtc gtt gcc gaa ggt gcg aat atg ccg tcg act ttg ggc      1056
Gly Cys Tyr Val Val Ala Glu Gly Ala Asn Met Pro Ser Thr Leu Gly
                      340                      345                      350

gcg gtc gag caa ttt atc aaa gcc ggc atc ctc tac gcc ccg ggc aaa      1104
Ala Val Glu Gln Phe Ile Lys Ala Gly Ile Leu Tyr Ala Pro Gly Lys
                      355                      360                      365

gcc tcc aac gcc ggc ggc gta gca act tca ggt ttg gaa atg agc caa      1152
Ala Ser Asn Ala Gly Gly Val Ala Thr Ser Gly Leu Glu Met Ser Gln
                      370                      375                      380

aac gcc atc cgc ctg tct tgg act cgt gaa gaa gtc gac caa cgc ctg      1200
Asn Ala Ile Arg Leu Ser Trp Thr Arg Glu Glu Val Asp Gln Arg Leu
385                      390                      395                      400

ttc ggc atc atg caa agc atc cac gaa tcc tgt ctg aaa tac ggc aaa      1248
Phe Gly Ile Met Gln Ser Ile His Glu Ser Cys Leu Lys Tyr Gly Lys
                      405                      410                      415

gtc ggc gac aca gta aac tac gtc aat ggt gcg aac att gcc ggt ttc      1296
Val Gly Asp Thr Val Asn Tyr Val Asn Gly Ala Asn Ile Ala Gly Phe
                      420                      425                      430

gtc aaa gtt gcc gat gcg atg ctg gcg caa ggc ttc                        1332
Val Lys Val Ala Asp Ala Met Leu Ala Gln Gly Phe
                      435                      440

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&lt;210&gt; 152

&lt;211&gt; 444

&lt;212&gt; PRT

&lt;213&gt; Neisseria meningitidis

&lt;400&gt; 152

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Met Thr Asp Leu Asn Thr Leu Phe Ala Asn Leu Lys Gln Arg Asn Pro
  1                      5                      10                      15

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Asn Gln Glu Pro Phe His Gln Ala Val Glu Glu Val Phe Met Ser Leu

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20	25	30
Asp Pro Phe Leu Ala Lys Asn Pro Lys Tyr Thr Gln Gln Ser Leu Leu		
35	40	45
Glu Arg Ile Val Glu Pro Glu Arg Val Val Met Phe Arg Val Thr Trp		
50	55	60
Gln Asp Asp Lys Gly Gln Val Gln Val Asn Arg Gly Tyr Arg Val Gln		
65	70	75
Met Ser Ser Ala Ile Gly Pro Tyr Lys Gly Gly Leu Arg Phe His Pro		
85	90	95
Thr Val Asp Leu Gly Val Leu Lys Phe Leu Ala Phe Glu Gln Val Phe		
100	105	110
Lys Asn Ala Leu Thr Thr Leu Pro Met Gly Gly Gly Lys Gly Gly Ser		
115	120	125
Asp Phe Asp Pro Lys Gly Lys Ser Asp Ala Glu Val Met Arg Phe Cys		
130	135	140
Gln Ala Phe Met Thr Glu Leu Tyr Arg His Ile Gly Ala Asp Thr Asp		
145	150	155
Val Pro Ala Gly Asp Ile Gly Val Gly Gly Arg Glu Ile Gly Tyr Leu		
165	170	175
Phe Gly Gln Tyr Lys Lys Ile Arg Asn Glu Phe Ser Ser Val Leu Thr		
180	185	190
Gly Lys Gly Leu Glu Trp Gly Gly Ser Leu Ile Arg Pro Glu Ala Thr		
195	200	205
Gly Tyr Gly Cys Val Tyr Phe Ala Gln Ala Met Leu Gln Thr Arg Asn		
210	215	220
Asp Ser Phe Glu Gly Lys Arg Val Leu Ile Ser Gly Ser Gly Asn Val		
225	230	235
Ala Gln Tyr Ala Ala Glu Lys Ala Ile Gln Leu Gly Ala Lys Val Leu		
245	250	255
Thr Val Ser Asp Ser Asn Gly Phe Val Leu Phe Pro Asp Ser Gly Met		
260	265	270
Ser Glu Ala Gln Leu Ala Ala Leu Ile Glu Leu Lys Glu Val Arg Arg		



275                                      280                                      285  
 Glu Arg Val Ala Thr Tyr Ala Lys Glu Gln Gly Leu Gln Tyr Phe Glu  
     290                                      295                                      300  
 Asn Gln Lys Pro Trp Gly Val Ala Ala Glu Ile Ala Leu Pro Cys Ala  
 305                                      310                                      315                                      320  
 Thr Gln Asn Glu Leu Asp Glu Glu Ala Ala Lys Thr Leu Leu Ala Asn  
                                     325                                      330                                      335  
 Gly Cys Tyr Val Val Ala Glu Gly Ala Asn Met Pro Ser Thr Leu Gly  
                                     340                                      345                                      350  
 Ala Val Glu Gln Phe Ile Lys Ala Gly Ile Leu Tyr Ala Pro Gly Lys  
                                     355                                      360                                      365  
 Ala Ser Asn Ala Gly Gly Val Ala Thr Ser Gly Leu Glu Met Ser Gln  
                                     370                                      375                                      380  
 Asn Ala Ile Arg Leu Ser Trp Thr Arg Glu Glu Val Asp Gln Arg Leu  
 385                                      390                                      395                                      400  
 Phe Gly Ile Met Gln Ser Ile His Glu Ser Cys Leu Lys Tyr Gly Lys  
                                     405                                      410                                      415  
 Val Gly Asp Thr Val Asn Tyr Val Asn Gly Ala Asn Ile Ala Gly Phe  
                                     420                                      425                                      430  
 Val Lys Val Ala Asp Ala Met Leu Ala Gln Gly Phe  
                                     435                                      440

&lt;210&gt; 153

&lt;211&gt; 867

&lt;212&gt; DNA

&lt;213&gt; Neisseria meningitidis

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(867)

&lt;400&gt; 153

atg aaa ccc ata cgg aaa gcc gtc ttc ccc gtc gca ggg atg gga aca      48  
 Met Lys Pro Ile Arg Lys Ala Val Phe Pro Val Ala Gly Met Gly Thr  
     1                                      5                                      10                                      15

cgc ttc ctg ccc gcc acc aag gca agc ccg aaa gaa atg ctg ccc atc	96
Arg Phe Leu Pro Ala Thr Lys Ala Ser Pro Lys Glu Met Leu Pro Ile	
20 25 30	
gtc gac aag ccg ctg atc caa tac gcc gta gaa gaa gcc gtg gaa gcc	144
Val Asp Lys Pro Leu Ile Gln Tyr Ala Val Glu Glu Ala Val Glu Ala	
35 40 45	
ggc tgc acg gaa atg gtg ttt gtt acc gga cgc aac aaa cgc agc atc	192
Gly Cys Thr Glu Met Val Phe Val Thr Gly Arg Asn Lys Arg Ser Ile	
50 55 60	
gaa gac cat ttc gac aag gca tac gaa ctc gaa acc gag ttg gaa atg	240
Glu Asp His Phe Asp Lys Ala Tyr Glu Leu Glu Thr Glu Leu Glu Met	
65 70 75 80	
cgc cat aaa gac aaa ttg ttg gaa cac gtc cgc aac atc ctg ccg ccg	288
Arg His Lys Asp Lys Leu Leu Glu His Val Arg Asn Ile Leu Pro Pro	
85 90 95	
aac att acc tgc ctc tac atc cgt cag gcg gaa gca ctg ggc ttg gga	336
Asn Ile Thr Cys Leu Tyr Ile Arg Gln Ala Glu Ala Leu Gly Leu Gly	
100 105 110	
cac gcc gtc ttg tgc gcc cgc gcc gcc atc ggc gac gaa ccc ttt gcc	384
His Ala Val Leu Cys Ala Arg Ala Ala Ile Gly Asp Glu Pro Phe Ala	
115 120 125	
gtg att ttg gct gac gat tta atc gat gcc caa aaa ggc gcg ctc aaa	432
Val Ile Leu Ala Asp Asp Leu Ile Asp Ala Gln Lys Gly Ala Leu Lys	
130 135 140	
caa atg gtc gaa gtg tac gaa cgc agc ggc aac agc att ttg ggc gta	480
Gln Met Val Glu Val Tyr Glu Arg Ser Gly Asn Ser Ile Leu Gly Val	
145 150 155 160	
gaa act gtc gaa ccg tcg caa acc ggc tca tac ggc atc gtc gaa acc	528
Glu Thr Val Glu Pro Ser Gln Thr Gly Ser Tyr Gly Ile Val Glu Thr	
165 170 175	
gaa cag ctc aaa cag ttc caa cgc att acc ggc att gtc gaa aaa ccc	576
Glu Gln Leu Lys Gln Phe Gln Arg Ile Thr Gly Ile Val Glu Lys Pro	
180 185 190	
aag ccc gaa gac gcg ccc tcc aac ctt gcc gtc gtc gga cgc tac atc	624
Lys Pro Glu Asp Ala Pro Ser Asn Leu Ala Val Val Gly Arg Tyr Ile	
195 200 205	

ctt acc ccg cgc att ttc gac tta ctg acc gga ctg ccg cgc ggc gcg 672  
 Leu Thr Pro Arg Ile Phe Asp Leu Leu Thr Gly Leu Pro Arg Gly Ala  
 210 215 220

ggc aac gaa atc cag ctt aca gac ggc atc gcc aag ctg ctc gat cac 720  
 Gly Asn Glu Ile Gln Leu Thr Asp Gly Ile Ala Lys Leu Leu Asp His  
 225 230 235 240

gaa ttt gtc cta gcg cac ccc ttt gaa ggc acg cgc tac gac tgc ggc 768  
 Glu Phe Val Leu Ala His Pro Phe Glu Gly Thr Arg Tyr Asp Cys Gly  
 245 250 255

agc aaa ctg ggc tat ctg gaa gcc acc gtc gcc tac ggc ctg aaa cac 816  
 Ser Lys Leu Gly Tyr Leu Glu Ala Thr Val Ala Tyr Gly Leu Lys His  
 260 265 270

ccc gaa acc ggc gaa ccc ttc cgc cgc ctt ttg gaa aaa tac cgt acc 864  
 Pro Glu Thr Gly Glu Pro Phe Arg Arg Leu Leu Glu Lys Tyr Arg Thr  
 275 280 285

gaa 867  
 Glu

<210> 154

<211> 289

<212> PRT

<213> Neisseria meningitidis

<400> 154

Met Lys Pro Ile Arg Lys Ala Val Phe Pro Val Ala Gly Met Gly Thr  
 1 5 10 15

Arg Phe Leu Pro Ala Thr Lys Ala Ser Pro Lys Glu Met Leu Pro Ile  
 20 25 30

Val Asp Lys Pro Leu Ile Gln Tyr Ala Val Glu Glu Ala Val Glu Ala  
 35 40 45

Gly Cys Thr Glu Met Val Phe Val Thr Gly Arg Asn Lys Arg Ser Ile  
 50 55 60

Glu Asp His Phe Asp Lys Ala Tyr Glu Leu Glu Thr Glu Leu Glu Met  
 65 70 75 80

Arg His Lys Asp Lys Leu Leu Glu His Val Arg Asn Ile Leu Pro Pro  
 85 90 95

Asn Ile Thr Cys Leu Tyr Ile Arg Gln Ala Glu Ala Leu Gly Leu Gly  
 100 105 110  
 His Ala Val Leu Cys Ala Arg Ala Ala Ile Gly Asp Glu Pro Phe Ala  
 115 120 125  
 Val Ile Leu Ala Asp Asp Leu Ile Asp Ala Gln Lys Gly Ala Leu Lys  
 130 135 140  
 Gln Met Val Glu Val Tyr Glu Arg Ser Gly Asn Ser Ile Leu Gly Val  
 145 150 155 160  
 Glu Thr Val Glu Pro Ser Gln Thr Gly Ser Tyr Gly Ile Val Glu Thr  
 165 170 175  
 Glu Gln Leu Lys Gln Phe Gln Arg Ile Thr Gly Ile Val Glu Lys Pro  
 180 185 190  
 Lys Pro Glu Asp Ala Pro Ser Asn Leu Ala Val Val Gly Arg Tyr Ile  
 195 200 205  
 Leu Thr Pro Arg Ile Phe Asp Leu Leu Thr Gly Leu Pro Arg Gly Ala  
 210 215 220  
 Gly Asn Glu Ile Gln Leu Thr Asp Gly Ile Ala Lys Leu Leu Asp His  
 225 230 235 240  
 Glu Phe Val Leu Ala His Pro Phe Glu Gly Thr Arg Tyr Asp Cys Gly  
 245 250 255  
 Ser Lys Leu Gly Tyr Leu Glu Ala Thr Val Ala Tyr Gly Leu Lys His  
 260 265 270  
 Pro Glu Thr Gly Glu Pro Phe Arg Arg Leu Leu Glu Lys Tyr Arg Thr  
 275 280 285  
 Glu

&lt;210&gt; 155

&lt;211&gt; 876

&lt;212&gt; DNA

&lt;213&gt; Neisseria meningitidis

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(876)

&lt;400&gt; 155

ttg acc gtc cga acg aaa aag acg gcg cat tat acc cta ttc cat tcc	48
Leu Thr Val Arg Thr Lys Lys Thr Ala His Tyr Thr Leu Phe His Ser	
1 5 10 15	
 gac cga aaa ccg aac atg act act ctc aaa ccc gcc ctg ccc gct tat	96
Asp Arg Lys Pro Asn Met Thr Thr Leu Lys Pro Ala Leu Pro Ala Tyr	
20 25 30	
 ctg gac aac atc cgc atc atc ctc acg cgc acc agc cat ccc gcc aac	144
Leu Asp Asn Ile Arg Ile Ile Leu Thr Arg Thr Ser His Pro Ala Asn	
35 40 45	
 atc ggc tct gcc gcg cgc gcg atg aaa aca atg ggt ctg cac aaa ctg	192
Ile Gly Ser Ala Ala Arg Ala Met Lys Thr Met Gly Leu His Lys Leu	
50 55 60	
 acc atc gtc gcc cca aat ctg atg gca acg ccg atg acg gaa aac ccg	240
Thr Ile Val Ala Pro Asn Leu Met Ala Thr Pro Met Thr Glu Asn Pro	
65 70 75 80	
 ccc gtg ttt gac ccg gag cat cct caa tcg ttt aaa tta ccg gaa gaa	288
Pro Val Phe Asp Pro Glu His Pro Gln Ser Phe Lys Leu Pro Glu Glu	
85 90 95	
 agc ttc atc ctc gct tcc ggc gcg gca gac gtt ttg gaa aat gcc acc	336
Ser Phe Ile Leu Ala Ser Gly Ala Ala Asp Val Leu Glu Asn Ala Thr	
100 105 110	
 att gcc gct tct ttg gac gaa gcc ctt gcc gac acc acc atc gcc tgc	384
Ile Ala Ala Ser Leu Asp Glu Ala Leu Ala Asp Thr Thr Ile Ala Cys	
115 120 125	
 gcc ctg acc agc cgc cgc cgc gaa att act gcg ccg ctg caa acc ccg	432
Ala Leu Thr Ser Arg Arg Arg Glu Ile Thr Ala Pro Leu Gln Thr Pro	
130 135 140	
 cgc gat ttg gta tcc gaa tta ctg cag acc gca aac cga ggc gag aaa	480
Arg Asp Leu Val Ser Glu Leu Leu Gln Thr Ala Asn Arg Gly Glu Lys	
145 150 155 160	
 gtg gca ctg gtt ttc ggc aac gag act ttc ggc ttg agc atc gaa gaa	528
Val Ala Leu Val Phe Gly Asn Glu Thr Phe Gly Leu Ser Ile Glu Glu	
165 170 175	
 gtc caa gcc tgc aac cga ctg atg acc atc aac ggc aat ccc gac tat	576

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Val  Gln  Ala  Cys  Asn  Arg  Leu  Met  Thr  Ile  Asn  Gly  Asn  Pro  Asp  Tyr
      180                      185                      190

ttc  tcg  ctc  aac  ctc  gcc  caa  gcc  gtg  cag  gtc  gtg  tgc  tac  gaa  atc      624
Phe  Ser  Leu  Asn  Leu  Ala  Gln  Ala  Val  Gln  Val  Val  Cys  Tyr  Glu  Ile
      195                      200                      205

ttc  agc  caa  acc  ggt  tcg  ccc  atg  acc  cat  ctt  caa  caa  gaa  gac  cac      672
Phe  Ser  Gln  Thr  Gly  Ser  Pro  Met  Thr  His  Leu  Gln  Gln  Glu  Asp  His
      210                      215                      220

gct  gcg  acc  cac  gag  caa  atc  aaa  ggc  atg  gtc  gcc  cac  atg  gaa  agc      720
Ala  Ala  Thr  His  Glu  Gln  Ile  Lys  Gly  Met  Val  Ala  His  Met  Glu  Ser
      225                      230                      235                      240

gtg  atg  aac  gac  atc  ggc  ttt  ttc  aac  cgc  cgc  aac  ggc  gag  cgt  ctg      768
Val  Met  Asn  Asp  Ile  Gly  Phe  Phe  Asn  Arg  Arg  Asn  Gly  Glu  Arg  Leu
      245                      250                      255

atg  cgc  cgt  atg  cag  agc  ctg  ttc  gga  cgc  gcc  aac  acg  caa  acc  gaa      816
Met  Arg  Arg  Met  Gln  Ser  Leu  Phe  Gly  Arg  Ala  Asn  Thr  Gln  Thr  Glu
      260                      265                      270

gac  atc  gat  atc  ctg  cgc  ggt  ttt  ttc  aat  acc  gtc  agc  cat  cgt  atc      864
Asp  Ile  Asp  Ile  Leu  Arg  Gly  Phe  Phe  Asn  Thr  Val  Ser  His  Arg  Ile
      275                      280                      285

cat  aaa  aaa  gac
His  Lys  Lys  Asp
      290

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&lt;210&gt; 156

&lt;211&gt; 292

&lt;212&gt; PRT

&lt;213&gt; Neisseria meningitidis

&lt;400&gt; 156

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Leu  Thr  Val  Arg  Thr  Lys  Lys  Thr  Ala  His  Tyr  Thr  Leu  Phe  His  Ser
  1                      5                      10                      15

Asp  Arg  Lys  Pro  Asn  Met  Thr  Thr  Leu  Lys  Pro  Ala  Leu  Pro  Ala  Tyr
      20                      25                      30

Leu  Asp  Asn  Ile  Arg  Ile  Ile  Leu  Thr  Arg  Thr  Ser  His  Pro  Ala  Asn
      35                      40                      45

Ile  Gly  Ser  Ala  Ala  Arg  Ala  Met  Lys  Thr  Met  Gly  Leu  His  Lys  Leu

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50		55		60	
Thr Ile Val Ala Pro Asn Leu Met Ala Thr Pro Met Thr Glu Asn Pro					
65		70		75	80
Pro Val Phe Asp Pro Glu His Pro Gln Ser Phe Lys Leu Pro Glu Glu					
	85		90		95
Ser Phe Ile Leu Ala Ser Gly Ala Ala Asp Val Leu Glu Asn Ala Thr					
	100		105		110
Ile Ala Ala Ser Leu Asp Glu Ala Leu Ala Asp Thr Thr Ile Ala Cys					
	115		120		125
Ala Leu Thr Ser Arg Arg Arg Glu Ile Thr Ala Pro Leu Gln Thr Pro					
	130		135		140
Arg Asp Leu Val Ser Glu Leu Leu Gln Thr Ala Asn Arg Gly Glu Lys					
145		150		155	160
Val Ala Leu Val Phe Gly Asn Glu Thr Phe Gly Leu Ser Ile Glu Glu					
	165		170		175
Val Gln Ala Cys Asn Arg Leu Met Thr Ile Asn Gly Asn Pro Asp Tyr					
	180		185		190
Phe Ser Leu Asn Leu Ala Gln Ala Val Gln Val Val Cys Tyr Glu Ile					
	195		200		205
Phe Ser Gln Thr Gly Ser Pro Met Thr His Leu Gln Gln Glu Asp His					
	210		215		220
Ala Ala Thr His Glu Gln Ile Lys Gly Met Val Ala His Met Glu Ser					
	225		230		235
Val Met Asn Asp Ile Gly Phe Phe Asn Arg Arg Asn Gly Glu Arg Leu					
	245		250		255
Met Arg Arg Met Gln Ser Leu Phe Gly Arg Ala Asn Thr Gln Thr Glu					
	260		265		270
Asp Ile Asp Ile Leu Arg Gly Phe Phe Asn Thr Val Ser His Arg Ile					
	275		280		285
His Lys Lys Asp					
	290				

&lt;210&gt; 157

&lt;211&gt; 1008

&lt;212&gt; DNA

<213> *Neisseria meningitidis*

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(1008)

&lt;400&gt; 157

atg tcc atc aaa atc ctg att att tcc ccc agt tgg ata ggc gac tgc	48
Met Ser Ile Lys Ile Leu Ile Ile Ser Pro Ser Trp Ile Gly Asp Cys	
1 5 10 15	
gtg atg acc cag ccc ttg ttc cgc cgt ttg aag gaa ctt cac ccc ggt	96
Val Met Thr Gln Pro Leu Phe Arg Arg Leu Lys Glu Leu His Pro Gly	
20 25 30	
tgc acg att gat gtg ttc gca ccg aag tgg tcg atg gcg gtg ttt gag	144
Cys Thr Ile Asp Val Phe Ala Pro Lys Trp Ser Met Ala Val Phe Glu	
35 40 45	
cgt atg ccg gaa gtg aat gag att ctt gaa aat ccg ttc gga cac ggt	192
Arg Met Pro Glu Val Asn Glu Ile Leu Glu Asn Pro Phe Gly His Gly	
50 55 60	
gcg ttg gag ttg aaa cgc cgt tgg cgg gtc ggt agg gat ttg ggg cgg	240
Ala Leu Glu Leu Lys Arg Arg Trp Arg Val Gly Arg Asp Leu Gly Arg	
65 70 75 80	
cgc gga tac gat cag gtt atc gtg ttg ccc ggt tct ttg aaa tcg gca	288
Arg Gly Tyr Asp Gln Val Ile Val Leu Pro Gly Ser Leu Lys Ser Ala	
85 90 95	
atc atc gcg ctg gcg aca ggt atc ggt aaa agg acg ggt tat gtc ggt	336
Ile Ile Ala Leu Ala Thr Gly Ile Gly Lys Arg Thr Gly Tyr Val Gly	
100 105 110	
gaa agc cgt tat ttt ctg ttg aac gat ata cgc agg ctg gat aag gaa	384
Glu Ser Arg Tyr Phe Leu Leu Asn Asp Ile Arg Arg Leu Asp Lys Glu	
115 120 125	
cgt ctg cct ttg atg gtg gac aga tat acg gct ctc gcg cat ccg agc	432
Arg Leu Pro Leu Met Val Asp Arg Tyr Thr Ala Leu Ala His Pro Ser	
130 135 140	
cag gag gat ttt gac ggg cat tcg gga ttc ccc gag ttt tcc att gat	480



311

&lt;210&gt; 158

&lt;211&gt; 336

&lt;212&gt; PRT

<213> *Neisseria meningitidis*

&lt;400&gt; 158

Met Ser Ile Lys Ile Leu Ile Ile Ser Pro Ser Trp Ile Gly Asp Cys  
 1 5 10 15

Val Met Thr Gln Pro Leu Phe Arg Arg Leu Lys Glu Leu His Pro Gly  
 20 25 30

Cys Thr Ile Asp Val Phe Ala Pro Lys Trp Ser Met Ala Val Phe Glu  
 35 40 45

Arg Met Pro Glu Val Asn Glu Ile Leu Glu Asn Pro Phe Gly His Gly  
 50 55 60

Ala Leu Glu Leu Lys Arg Arg Trp Arg Val Gly Arg Asp Leu Gly Arg  
 65 70 75 80

Arg Gly Tyr Asp Gln Val Ile Val Leu Pro Gly Ser Leu Lys Ser Ala  
 85 90 95

Ile Ile Ala Leu Ala Thr Gly Ile Gly Lys Arg Thr Gly Tyr Val Gly  
 100 105 110

Glu Ser Arg Tyr Phe Leu Leu Asn Asp Ile Arg Arg Leu Asp Lys Glu  
 115 120 125

Arg Leu Pro Leu Met Val Asp Arg Tyr Thr Ala Leu Ala His Pro Ser  
 130 135 140

Gln Glu Asp Phe Asp Gly His Ser Gly Phe Pro Glu Phe Ser Ile Asp  
 145 150 155 160

Glu Arg Arg Arg Glu Ile Ser Val Glu Thr Phe Gly Leu Asp Ile Gly  
 165 170 175

Lys Pro Val Leu Ala Phe Cys Pro Gly Ala Glu Phe Gly Pro Ala Lys  
 180 185 190

Arg Trp Pro Thr Arg Tyr Phe Ala Glu Leu Gly Lys His Tyr Ser Ala  
 195 200 205

Ala Gly Trp Gln Val Trp Leu Phe Gly Ser Gln Lys Asp Asp Glu Ile  
 210 215 220

Ala Glu Glu Ile Asn Cys Leu Ser Asp Gly Met Cys Val Asn Leu Cys  
 225 230 235 240

Gly Lys Thr Asp Leu Ser Gln Ala Met Asp Leu Leu Ser Leu Ala Asp  
 245 250 255

Thr Val Val Cys Asn Asp Ser Gly Leu Met His Leu Ala Ala Ala Leu  
 260 265 270

Gly Arg Lys Val Val Ala Val Tyr Gly Ser Ser Ser Pro Thr His Thr  
 275 280 285

Pro Pro Leu Ser Asp Arg Ala Lys Ile Val Ser Leu His Leu Glu Cys  
 290 295 300

Ser Pro Cys Phe Lys Arg Glu Cys Pro Leu Gly His Thr Asp Cys Leu  
 305 310 315 320

Asn Arg Leu Tyr Pro Glu Lys Ile Val Gln Ala Val Glu Glu Ala Val  
 325 330 335

<210> 159

<211> 381

<212> DNA

<213> Neisseria meningitidis

<220>

<221> CDS

<222> (1)..(381)

<400> 159

atg gaa cct tcc tcc tac gcg gca gaa aaa aaa gga aaa ggc ggc atc 48  
 Met Glu Pro Ser Ser Tyr Ala Ala Glu Lys Lys Gly Lys Gly Gly Ile  
 1 5 10 15

agg cgc gtc atc aac gca ttc ggc tat tcg ata gac ggc atc gcc gcc 96  
 Arg Arg Val Ile Asn Ala Phe Gly Tyr Ser Ile Asp Gly Ile Ala Ala  
 20 25 30

gcc tac cgt tac gaa gcg gca ttc cgt cag gtt ttg tgg ctg aac gcg 144  
 Ala Tyr Arg Tyr Glu Ala Ala Phe Arg Gln Val Leu Trp Leu Asn Ala  
 35 40 45

ctg ctg gtg tgc gcg gca ttt ttt tgg gtt tcc gaa aag tcc ctc cgc 192  
 Leu Leu Val Cys Ala Ala Phe Phe Trp Val Ser Glu Lys Ser Leu Arg  
 50 55 60

ctg ccg ttg att atc gcg tct ttt gtg tcg gtc att gtc gaa ctg ttc 240  
 Leu Pro Leu Ile Ile Ala Ser Phe Val Ser Val Ile Val Glu Leu Phe  
 65 70 75 80

aac act gcc gtc gaa gcc gcc gtc gat cat act tcg act gaa aaa cac 288  
 Asn Thr Ala Val Glu Ala Ala Val Asp His Thr Ser Thr Glu Lys His  
 85 90 95

gag ctg gct aaa cgc gcc aaa gac gca ggt tct gct gca caa ttg ttc 336  
 Glu Leu Ala Lys Arg Ala Lys Asp Ala Gly Ser Ala Ala Gln Leu Phe  
 100 105 110

gcg atg ctg atg tta gcg gcg gtt tgg ctg tcc gcc ctg ttc ggg 381  
 Ala Met Leu Met Leu Ala Ala Val Trp Leu Ser Ala Leu Phe Gly  
 115 120 125

<210> 160

<211> 127

<212> PRT

<213> *Neisseria meningitidis*

<400> 160

Met Glu Pro Ser Ser Tyr Ala Ala Glu Lys Lys Gly Lys Gly Gly Ile  
 1 5 10 15

Arg Arg Val Ile Asn Ala Phe Gly Tyr Ser Ile Asp Gly Ile Ala Ala  
 20 25 30

Ala Tyr Arg Tyr Glu Ala Ala Phe Arg Gln Val Leu Trp Leu Asn Ala  
 35 40 45

Leu Leu Val Cys Ala Ala Phe Phe Trp Val Ser Glu Lys Ser Leu Arg  
 50 55 60

Leu Pro Leu Ile Ile Ala Ser Phe Val Ser Val Ile Val Glu Leu Phe  
 65 70 75 80

Asn Thr Ala Val Glu Ala Ala Val Asp His Thr Ser Thr Glu Lys His  
 85 90 95

Glu Leu Ala Lys Arg Ala Lys Asp Ala Gly Ser Ala Ala Gln Leu Phe  
 100 105 110

Ala Met Leu Met Leu Ala Ala Val Trp Leu Ser Ala Leu Phe Gly  
 115 120 125

&lt;210&gt; 161

&lt;211&gt; 990

&lt;212&gt; DNA

<213> *Neisseria meningitidis*

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(990)

&lt;400&gt; 161

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atg aaa aaa gaa agc cgc ccc gcg ttt gac gcg gca gcc gta ttt gac      48
Met Lys Lys Glu Ser Arg Pro Ala Phe Asp Ala Ala Ala Val Phe Asp
   1             5             10             15

gcg gca gcc gta ccg gta tcc gac agc ggg ttt gcc gcc aat gca aat      96
Ala Ala Ala Val Pro Val Ser Asp Ser Gly Phe Ala Ala Asn Ala Asn
           20             25             30

gtc cgc cgt ttt gtg gac gat gaa gtc ggg aaa ggg gat ttt tcc cgg      144
Val Arg Arg Phe Val Asp Asp Glu Val Gly Lys Gly Asp Phe Ser Arg
           35             40             45

gcg gaa tgg cag gat ttt ttt gac aaa gcg gct tac aag gcg gac atc      192
Ala Glu Trp Gln Asp Phe Phe Asp Lys Ala Ala Tyr Lys Ala Asp Ile
           50             55             60

gtc aag att atg cac cgc ccc tcc aca tcg cgt ccg tgg tat gtg ttc      240
Val Lys Ile Met His Arg Pro Ser Thr Ser Arg Pro Trp Tyr Val Phe
           65             70             75             80

cgc acg gga aat tcg ggc aag gcg aaa ttt cgc ggc gcg cgc cgg ttt      288
Arg Thr Gly Asn Ser Gly Lys Ala Lys Phe Arg Gly Ala Arg Arg Phe
           85             90             95

tat gcg gaa aac cgc gcg ctt atc gat gat gtg gcg caa aaa tac ggc      336
Tyr Ala Glu Asn Arg Ala Leu Ile Asp Asp Val Ala Gln Lys Tyr Gly
           100            105            110

gtg cct gcc gaa ctt atc gtg gcg gtt atc ggg att gaa acg aat tac      384
Val Pro Ala Glu Leu Ile Val Ala Val Ile Gly Ile Glu Thr Asn Tyr
           115            120            125

ggc aaa aat acg ggc agt ttc cgt gtg gcg gac gca ttg gcg acc tta      432
Gly Lys Asn Thr Gly Ser Phe Arg Val Ala Asp Ala Leu Ala Thr Leu
           130            135            140

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ggc ttt gat tac ccc cgc cgc gcc ggg ttt ttc caa aaa gaa ttg gtc	480
Gly Phe Asp Tyr Pro Arg Arg Ala Gly Phe Phe Gln Lys Glu Leu Val	
145 150 155 160	
gag ctt tta aag ctg gca aaa gaa gaa ggc ggc gat gtt ttc gcc ttt	528
Glu Leu Leu Lys Leu Ala Lys Glu Glu Gly Gly Asp Val Phe Ala Phe	
165 170 175	
aaa ggc agc tat gcg ggc gca atg ggg atg ccg caa ttt atg cct tcg	576
Lys Gly Ser Tyr Ala Gly Ala Met Gly Met Pro Gln Phe Met Pro Ser	
180 185 190	
agc tac cgg aaa tgg gcg gtg gat tat gac ggg gac gga cat cgg gac	624
Ser Tyr Arg Lys Trp Ala Val Asp Tyr Asp Gly Asp Gly His Arg Asp	
195 200 205	
ata tgg ggc aat gtt ggc gat gtc gcg gca tcg att gcc aat tat atg	672
Ile Trp Gly Asn Val Gly Asp Val Ala Ala Ser Ile Ala Asn Tyr Met	
210 215 220	
aag cag cac ggt tgg cgc acg ggc ggg aaa ata ctg gtg tct gca aca	720
Lys Gln His Gly Trp Arg Thr Gly Gly Lys Ile Leu Val Ser Ala Thr	
225 230 235 240	
ttg gcg ccg ggt gcg gat gtt cag gca atc att ggc gaa aaa acc gcc	768
Leu Ala Pro Gly Ala Asp Val Gln Ala Ile Ile Gly Glu Lys Thr Ala	
245 250 255	
ctg acg ccg acg gtg gcg gat ttg aag gcg tac ggc atc atc ccc ggc	816
Leu Thr Arg Thr Val Ala Asp Leu Lys Ala Tyr Gly Ile Ile Pro Gly	
260 265 270	
gaa gag ctt gcc gat gat gaa aag gcg gtt ttg ttc aaa ctg gaa acc	864
Glu Glu Leu Ala Asp Asp Glu Lys Ala Val Leu Phe Lys Leu Glu Thr	
275 280 285	
gca ccc ggc gtg ttt gaa tat tat ttg ggc ttg aac aat ttt tat acg	912
Ala Pro Gly Val Phe Glu Tyr Tyr Leu Gly Leu Asn Asn Phe Tyr Thr	
290 295 300	
gta tgg cag tac aat cac agt cgg atg tat gta acg gcg gtc agg gac	960
Val Trp Gln Tyr Asn His Ser Arg Met Tyr Val Thr Ala Val Arg Asp	
305 310 315 320	
att gcc aat tcg ctt ggc ggc ccg gga ttg	990
Ile Ala Asn Ser Leu Gly Gly Pro Gly Leu	
325 330	

&lt;210&gt; 162

&lt;211&gt; 330

&lt;212&gt; PRT

&lt;213&gt; Neisseria meningitidis

&lt;400&gt; 162

Met Lys Lys Glu Ser Arg Pro Ala Phe Asp Ala Ala Ala Val Phe Asp  
 1 5 10 15

Ala Ala Ala Val Pro Val Ser Asp Ser Gly Phe Ala Ala Asn Ala Asn  
 20 25 30

Val Arg Arg Phe Val Asp Asp Glu Val Gly Lys Gly Asp Phe Ser Arg  
 35 40 45

Ala Glu Trp Gln Asp Phe Phe Asp Lys Ala Ala Tyr Lys Ala Asp Ile  
 50 55 60

Val Lys Ile Met His Arg Pro Ser Thr Ser Arg Pro Trp Tyr Val Phe  
 65 70 75 80

Arg Thr Gly Asn Ser Gly Lys Ala Lys Phe Arg Gly Ala Arg Arg Phe  
 85 90 95

Tyr Ala Glu Asn Arg Ala Leu Ile Asp Asp Val Ala Gln Lys Tyr Gly  
 100 105 110

Val Pro Ala Glu Leu Ile Val Ala Val Ile Gly Ile Glu Thr Asn Tyr  
 115 120 125

Gly Lys Asn Thr Gly Ser Phe Arg Val Ala Asp Ala Leu Ala Thr Leu  
 130 135 140

Gly Phe Asp Tyr Pro Arg Arg Ala Gly Phe Phe Gln Lys Glu Leu Val  
 145 150 155 160

Glu Leu Leu Lys Leu Ala Lys Glu Glu Gly Gly Asp Val Phe Ala Phe  
 165 170 175

Lys Gly Ser Tyr Ala Gly Ala Met Gly Met Pro Gln Phe Met Pro Ser  
 180 185 190

Ser Tyr Arg Lys Trp Ala Val Asp Tyr Asp Gly Asp Gly His Arg Asp  
 195 200 205

Ile Trp Gly Asn Val Gly Asp Val Ala Ala Ser Ile Ala Asn Tyr Met  
 210 215 220

Lys Gln His Gly Trp Arg Thr Gly Gly Lys Ile Leu Val Ser Ala Thr  
 225 230 235 240

Leu Ala Pro Gly Ala Asp Val Gln Ala Ile Ile Gly Glu Lys Thr Ala  
 245 250 255

Leu Thr Arg Thr Val Ala Asp Leu Lys Ala Tyr Gly Ile Ile Pro Gly  
 260 265 270

Glu Glu Leu Ala Asp Asp Glu Lys Ala Val Leu Phe Lys Leu Glu Thr  
 275 280 285

Ala Pro Gly Val Phe Glu Tyr Tyr Leu Gly Leu Asn Asn Phe Tyr Thr  
 290 295 300

Val Trp Gln Tyr Asn His Ser Arg Met Tyr Val Thr Ala Val Arg Asp  
 305 310 315 320

Ile Ala Asn Ser Leu Gly Gly Pro Gly Leu  
 325 330

<210> 163

<211> 1773

<212> DNA

<213> Neisseria meningitidis

<220>

<221> CDS

<222> (1)..(1773)

<400> 163

atg agt atc gtg ctg cac ggc gtg gcg gcg ggc aaa ggc att gcc gtc 48  
 Met Ser Ile Val Leu His Gly Val Ala Ala Gly Lys Gly Ile Ala Val  
 1 5 10 15

ggt tgc gcc cac ctg att gcg cgc ggt acg gag gaa gtg ccg cag tat 96  
 Gly Cys Ala His Leu Ile Ala Arg Gly Thr Glu Glu Val Pro Gln Tyr  
 20 25 30

gat gtt gcg gag gcg gac acc gat gcc gaa gcc gaa cgt ttc gat gcc 144  
 Asp Val Ala Glu Ala Asp Thr Asp Ala Glu Ala Glu Arg Phe Asp Ala  
 35 40 45

gcc gtc aaa gcc acg cgc aaa gag ttg gaa cag ctc cgc agc gcg att 192  
 Ala Val Lys Ala Thr Arg Lys Glu Leu Glu Gln Leu Arg Ser Ala Ile



50	55	60	
ccc gaa aac gcc ccg acc gag ttg ggc gcg ttc atc tcg ctg cac ctg			240
Pro Glu Asn Ala Pro Thr Glu Leu Gly Ala Phe Ile Ser Leu His Leu			
65	70	75	80
atg ctc ttg acc gat gtt acc ttg tcg cgc gaa ccc gtc gat att tta			288
Met Leu Leu Thr Asp Val Thr Leu Ser Arg Glu Pro Val Asp Ile Leu			
	85	90	95
agg gaa caa aaa atc aac gcc gag tgg gca ttg aag cag cag agc gac			336
Arg Glu Gln Lys Ile Asn Ala Glu Trp Ala Leu Lys Gln Gln Ser Asp			
	100	105	110
aaa ctc gcc gcc caa ttc gac aat atg gac gat gcc tat ttg cgc gaa			384
Lys Leu Ala Ala Gln Phe Asp Asn Met Asp Asp Ala Tyr Leu Arg Glu			
	115	120	125
cgc aag cag gat atg ctg caa gtc gtc cgc cgc atc cac aac aac ctg			432
Arg Lys Gln Asp Met Leu Gln Val Val Arg Arg Ile His Asn Asn Leu			
	130	135	140
atc ggg cag ggc aac gag ttg gaa gtt gcc gac aac ctg ttt gac gaa			480
Ile Gly Gln Gly Asn Glu Leu Glu Val Ala Asp Asn Leu Phe Asp Glu			
145	150	155	160
acc gtt ctg att gca aac gac ctt tcg ccc gcc gac acg gtt ttg ttt			528
Thr Val Leu Ile Ala Asn Asp Leu Ser Pro Ala Asp Thr Val Leu Phe			
	165	170	175
aaa gag cag cgc att gcc gcc ttc gtt acc gat gcc ggc ggc ccc acc			576
Lys Glu Gln Arg Ile Ala Ala Phe Val Thr Asp Ala Gly Gly Pro Thr			
	180	185	190
ggg cat acg gcg att ttg ggc agg agc ttg gac atc ccg tcc gtc gtc			624
Gly His Thr Ala Ile Leu Gly Arg Ser Leu Asp Ile Pro Ser Val Val			
	195	200	205
ggg ctg cac aac gcg cgc aaa ctg att acc gag ggc gaa acg gtc att			672
Gly Leu His Asn Ala Arg Lys Leu Ile Thr Glu Gly Glu Thr Val Ile			
	210	215	220
gtg gac ggt atc aac ggc gtg ttg att atc gcg ccg gat gag tcg gtg			720
Val Asp Gly Ile Asn Gly Val Leu Ile Ile Ala Pro Asp Glu Ser Val			
225	230	235	240
ttg aac gaa tac cgc cgc cgt gcc cgc gaa tac cgc agc cac aaa cgc			768
Leu Asn Glu Tyr Arg Arg Arg Ala Arg Glu Tyr Arg Ser His Lys Arg			

	245	250	255	
gat ttg aac aag ctc aaa aaa acc gcc gcc gcc acc gct gac ggg gtc				816
Asp Leu Asn Lys Leu Lys Lys Thr Ala Ala Ala Thr Ala Asp Gly Val				
	260	265	270	
tgc atc gag ctt gtg ggc aat ata gaa tcc gcc gaa gac gtg aaa ccg				864
Cys Ile Glu Leu Val Gly Asn Ile Glu Ser Ala Glu Asp Val Lys Pro				
	275	280	285	
ctg cac aac ctc ggc gca gac ggc atc ggg ctg ttc cgc agc gag ttt				912
Leu His Asn Leu Gly Ala Asp Gly Ile Gly Leu Phe Arg Ser Glu Phe				
	290	295	300	
ctt tac ctg aac cgc gat acg atg ccg tct gaa gac gag cag tac gaa				960
Leu Tyr Leu Asn Arg Asp Thr Met Pro Ser Glu Asp Glu Gln Tyr Glu				
	305	310	315	320
gtg tac agc gcg att gtc aaa aaa atg aaa ggc aaa agc gta acg ata				1008
Val Tyr Ser Ala Ile Val Lys Lys Met Lys Gly Lys Ser Val Thr Ile				
	325	330	335	
cgg aca gtc gat ttg ggt gtg gac aaa aac ccg cgc tgg ttc ggg aaa				1056
Arg Thr Val Asp Leu Gly Val Asp Lys Asn Pro Arg Trp Phe Gly Lys				
	340	345	350	
aac agc acg ccc aac ggc agc ctc aac ccc gcg ctg ggc atg acc ggc				1104
Asn Ser Thr Pro Asn Gly Ser Leu Asn Pro Ala Leu Gly Met Thr Gly				
	355	360	365	
atc cgc ctg tgc ctt gcc gaa ccg gtc atg ttc cgc acc cag atg cgc				1152
Ile Arg Leu Cys Leu Ala Glu Pro Val Met Phe Arg Thr Gln Met Arg				
	370	375	380	
gcc atc ctc cgc gcc gcc gcc cac ggc ccc gtg cgg atg atg tgg ccg				1200
Ala Ile Leu Arg Ala Ala Ala His Gly Pro Val Arg Met Met Trp Pro				
	385	390	395	400
atg att acc tcc gta tcc gaa gtg cgc cag tgc ctc atc cac ctc gac				1248
Met Ile Thr Ser Val Ser Glu Val Arg Gln Cys Leu Ile His Leu Asp				
	405	410	415	
acc gcg caa cgc cag ctt gcc gaa cgc ggc gat gcc ttc ggt aaa gtc				1296
Thr Ala Gln Arg Gln Leu Ala Glu Arg Gly Asp Ala Phe Gly Lys Val				
	420	425	430	
ggc atc ggc tgt atg att gaa att ccg tct gcc gcg ctg acc gtc ggc				1344
Gly Ile Gly Cys Met Ile Glu Ile Pro Ser Ala Ala Leu Thr Val Gly				

435	440	445	
agt att ttg aaa ctg gtc gat ttc atc tcc gtc ggt acc aac gac ctg			1392
Ser Ile Leu Lys Leu Val Asp Phe Ile Ser Val Gly Thr Asn Asp Leu			
450	455	460	
att caa tac atc ttg tcc gtc gat cgc ggc gac gac agc gtc agc cac			1440
Ile Gln Tyr Ile Leu Ser Val Asp Arg Gly Asp Asp Ser Val Ser His			
465	470	475	480
ctc tac cag ccc ggc cat ccc gcc gtg ctg aaa atg ctg caa cac gtc			1488
Leu Tyr Gln Pro Gly His Pro Ala Val Leu Lys Met Leu Gln His Val			
	485	490	495
atc cgt acc gcc aac cgc atg gac aaa gac gta tcc gta tgc ggc gag			1536
Ile Arg Thr Ala Asn Arg Met Asp Lys Asp Val Ser Val Cys Gly Glu			
	500	505	510
atg gcg ggc gat acc gcg ttt acc cgc gtt tta ttg ggt atg ggg ctg			1584
Met Ala Gly Asp Thr Ala Phe Thr Arg Val Leu Leu Gly Met Gly Leu			
	515	520	525
cgc cgt ttt tcc atg aac ccc aac aac atc ctg ccc gtc aaa aac atc			1632
Arg Arg Phe Ser Met Asn Pro Asn Asn Ile Leu Pro Val Lys Asn Ile			
	530	535	540
att ctg cac agc aat gtc gga cag ctc gaa agc gat att gtg aaa gtc			1680
Ile Leu His Ser Asn Val Gly Gln Leu Glu Ser Asp Ile Val Lys Val			
545	550	555	560
atc cgc tgc gaa gac gaa gag aag tcg gaa aag ctg atc aaa cag atg			1728
Ile Arg Cys Glu Asp Glu Glu Lys Ser Glu Lys Leu Ile Lys Gln Met			
	565	570	575
aac agc gtg tct gtc gag gaa gaa gcc gac ttc aag ggg cgg aaa			1773
Asn Ser Val Ser Val Glu Glu Glu Ala Asp Phe Lys Gly Arg Lys			
	580	585	590

&lt;210&gt; 164

&lt;211&gt; 591

&lt;212&gt; PRT

&lt;213&gt; Neisseria meningitidis

&lt;400&gt; 164

Met	Ser	Ile	Val	Leu	His	Gly	Val	Ala	Ala	Gly	Lys	Gly	Ile	Ala	Val
1				5				10					15		

Gly	Cys	Ala	His	Leu	Ile	Ala	Arg	Gly	Thr	Glu	Glu	Val	Pro	Gln	Tyr	20	25	30
Asp	Val	Ala	Glu	Ala	Asp	Thr	Asp	Ala	Glu	Ala	Glu	Arg	Phe	Asp	Ala	35	40	45
Ala	Val	Lys	Ala	Thr	Arg	Lys	Glu	Leu	Glu	Gln	Leu	Arg	Ser	Ala	Ile	50	55	60
Pro	Glu	Asn	Ala	Pro	Thr	Glu	Leu	Gly	Ala	Phe	Ile	Ser	Leu	His	Leu	65	70	75
Met	Leu	Leu	Thr	Asp	Val	Thr	Leu	Ser	Arg	Glu	Pro	Val	Asp	Ile	Leu	85	90	95
Arg	Glu	Gln	Lys	Ile	Asn	Ala	Glu	Trp	Ala	Leu	Lys	Gln	Gln	Ser	Asp	100	105	110
Lys	Leu	Ala	Ala	Gln	Phe	Asp	Asn	Met	Asp	Asp	Ala	Tyr	Leu	Arg	Glu	115	120	125
Arg	Lys	Gln	Asp	Met	Leu	Gln	Val	Val	Arg	Arg	Ile	His	Asn	Asn	Leu	130	135	140
Ile	Gly	Gln	Gly	Asn	Glu	Leu	Glu	Val	Ala	Asp	Asn	Leu	Phe	Asp	Glu	145	150	155
Thr	Val	Leu	Ile	Ala	Asn	Asp	Leu	Ser	Pro	Ala	Asp	Thr	Val	Leu	Phe	165	170	175
Lys	Glu	Gln	Arg	Ile	Ala	Ala	Phe	Val	Thr	Asp	Ala	Gly	Gly	Pro	Thr	180	185	190
Gly	His	Thr	Ala	Ile	Leu	Gly	Arg	Ser	Leu	Asp	Ile	Pro	Ser	Val	Val	195	200	205
Gly	Leu	His	Asn	Ala	Arg	Lys	Leu	Ile	Thr	Glu	Gly	Glu	Thr	Val	Ile	210	215	220
Val	Asp	Gly	Ile	Asn	Gly	Val	Leu	Ile	Ile	Ala	Pro	Asp	Glu	Ser	Val	225	230	235
Leu	Asn	Glu	Tyr	Arg	Arg	Arg	Ala	Arg	Glu	Tyr	Arg	Ser	His	Lys	Arg	245	250	255
Asp	Leu	Asn	Lys	Leu	Lys	Lys	Thr	Ala	Ala	Ala	Thr	Ala	Asp	Gly	Val	260	265	270

Cys Ile Glu Leu Val Gly Asn Ile Glu Ser Ala Glu Asp Val Lys Pro  
 275 280 285

Leu His Asn Leu Gly Ala Asp Gly Ile Gly Leu Phe Arg Ser Glu Phe  
 290 295 300

Leu Tyr Leu Asn Arg Asp Thr Met Pro Ser Glu Asp Glu Gln Tyr Glu  
 305 310 315 320

Val Tyr Ser Ala Ile Val Lys Lys Met Lys Gly Lys Ser Val Thr Ile  
 325 330 335

Arg Thr Val Asp Leu Gly Val Asp Lys Asn Pro Arg Trp Phe Gly Lys  
 340 345 350

Asn Ser Thr Pro Asn Gly Ser Leu Asn Pro Ala Leu Gly Met Thr Gly  
 355 360 365

Ile Arg Leu Cys Leu Ala Glu Pro Val Met Phe Arg Thr Gln Met Arg  
 370 375 380

Ala Ile Leu Arg Ala Ala Ala His Gly Pro Val Arg Met Met Trp Pro  
 385 390 395 400

Met Ile Thr Ser Val Ser Glu Val Arg Gln Cys Leu Ile His Leu Asp  
 405 410 415

Thr Ala Gln Arg Gln Leu Ala Glu Arg Gly Asp Ala Phe Gly Lys Val  
 420 425 430

Gly Ile Gly Cys Met Ile Glu Ile Pro Ser Ala Ala Leu Thr Val Gly  
 435 440 445

Ser Ile Leu Lys Leu Val Asp Phe Ile Ser Val Gly Thr Asn Asp Leu  
 450 455 460

Ile Gln Tyr Ile Leu Ser Val Asp Arg Gly Asp Asp Ser Val Ser His  
 465 470 475 480

Leu Tyr Gln Pro Gly His Pro Ala Val Leu Lys Met Leu Gln His Val  
 485 490 495

Ile Arg Thr Ala Asn Arg Met Asp Lys Asp Val Ser Val Cys Gly Glu  
 500 505 510

Met Ala Gly Asp Thr Ala Phe Thr Arg Val Leu Leu Gly Met Gly Leu  
 515 520 525

Arg Arg Phe Ser Met Asn Pro Asn Asn Ile Leu Pro Val Lys Asn Ile  
 530 535 540

Ile Leu His Ser Asn Val Gly Gln Leu Glu Ser Asp Ile Val Lys Val  
 545 550 555 560

Ile Arg Cys Glu Asp Glu Glu Lys Ser Glu Lys Leu Ile Lys Gln Met  
 565 570 575

Asn Ser Val Ser Val Glu Glu Glu Ala Asp Phe Lys Gly Arg Lys  
 580 585 590

<210> 165

<211> 381

<212> DNA

<213> Neisseria meningitidis

<220>

<221> CDS

<222> (1)..(381)

<400> 165

atg gaa cct tcc tcc tac gcg gca gaa aaa aaa gga aaa ggc ggc atc 48  
 Met Glu Pro Ser Ser Tyr Ala Ala Glu Lys Lys Gly Lys Gly Gly Ile  
 1 5 10 15

agg cgc gtc atc aac gca ttc ggc tat tcg ata gac ggc atc gcc gcc 96  
 Arg Arg Val Ile Asn Ala Phe Gly Tyr Ser Ile Asp Gly Ile Ala Ala  
 20 25 30

gcc tac cgt tac gaa gcg gca ttc cgt cag gtt ttg tgg ctg aac gcg 144  
 Ala Tyr Arg Tyr Glu Ala Ala Phe Arg Gln Val Leu Trp Leu Asn Ala  
 35 40 45

ctg ctg gtg tgc gcg gca ttt ttt tgg gtt tcc gaa aag tcc ctc cgc 192  
 Leu Leu Val Cys Ala Ala Phe Phe Trp Val Ser Glu Lys Ser Leu Arg  
 50 55 60

ctg ccg ttg att atc gcg tct ttt gtg tcg gtc att gtc gaa ctg ttc 240  
 Leu Pro Leu Ile Ile Ala Ser Phe Val Ser Val Ile Val Glu Leu Phe  
 65 70 75 80

aac act gcc gtc gaa gcc gcc gtc gat cat act tcg act gaa aaa cac 288  
 Asn Thr Ala Val Glu Ala Ala Val Asp His Thr Ser Thr Glu Lys His  
 85 90 95

gag ctg gct aaa cgc gcc aaa gac gca ggt tct gct gca caa ttg ttc 336  
 Glu Leu Ala Lys Arg Ala Lys Asp Ala Gly Ser Ala Ala Gln Leu Phe  
                   100                  105                  110

gcg atg ctg atg tta gcg gcg gtt tgg ctg tcc gcc ctg ttc ggg 381  
 Ala Met Leu Met Leu Ala Ala Val Trp Leu Ser Ala Leu Phe Gly  
                   115                  120                  125

<210> 166

<211> 127

<212> PRT

<213> Neisseria meningitidis

<400> 166

Met Glu Pro Ser Ser Tyr Ala Ala Glu Lys Lys Gly Lys Gly Gly Ile  
       1                  5                  10                  15

Arg Arg Val Ile Asn Ala Phe Gly Tyr Ser Ile Asp Gly Ile Ala Ala  
                   20                  25                  30

Ala Tyr Arg Tyr Glu Ala Ala Phe Arg Gln Val Leu Trp Leu Asn Ala  
                   35                  40                  45

Leu Leu Val Cys Ala Ala Phe Phe Trp Val Ser Glu Lys Ser Leu Arg  
       50                  55                  60

Leu Pro Leu Ile Ile Ala Ser Phe Val Ser Val Ile Val Glu Leu Phe  
       65                  70                  75                  80

Asn Thr Ala Val Glu Ala Ala Val Asp His Thr Ser Thr Glu Lys His  
                   85                  90                  95

Glu Leu Ala Lys Arg Ala Lys Asp Ala Gly Ser Ala Ala Gln Leu Phe  
                   100                  105                  110

Ala Met Leu Met Leu Ala Ala Val Trp Leu Ser Ala Leu Phe Gly  
                   115                  120                  125

<210> 167

<211> 1257

<212> DNA

<213> Neisseria meningitidis

<220>

<221> CDS

&lt;222&gt; (1)..(1257)

&lt;400&gt; 167

atg agt atg gca ctt gcc caa aaa ctt gcc gcc gac agc att gcg gcg	48
Met Ser Met Ala Leu Ala Gln Lys Leu Ala Ala Asp Ser Ile Ala Ala	
1 5 10 15	
gtt gcc gaa gga cgc aac ctt cag gac gtg ttg gcg caa atc cgc acc	96
Val Ala Glu Gly Arg Asn Leu Gln Asp Val Leu Ala Gln Ile Arg Thr	
20 25 30	
gcg cat ccc gac ctt acg gcg cag gaa aac ggc gcg ttg cag gac atc	144
Ala His Pro Asp Leu Thr Ala Gln Glu Asn Gly Ala Leu Gln Asp Ile	
35 40 45	
gcc tac ggc tgc cag cgt tat ttg ggc agt ttg aaa cat atg ctc gcg	192
Ala Tyr Gly Cys Gln Arg Tyr Leu Gly Ser Leu Lys His Met Leu Ala	
50 55 60	
cag atg ctg aaa aag ccg att ggc aat ccg cag ctc gaa agt ctg ctt	240
Gln Met Leu Lys Lys Pro Ile Gly Asn Pro Gln Leu Glu Ser Leu Leu	
65 70 75 80	
ttg gcg gcg ttg tac caa ctg cat tac acg cgc aac gcg ccg cat gct	288
Leu Ala Ala Leu Tyr Gln Leu His Tyr Thr Arg Asn Ala Pro His Ala	
85 90 95	
gtg gtc aac gaa gct gtt gaa agc atc gcc aaa atc gga cgc ggg cag	336
Val Val Asn Glu Ala Val Glu Ser Ile Ala Lys Ile Gly Arg Gly Gln	
100 105 110	
tac cgt tcg ttt gcc aac gcg att ttg cgc cgc ttt ttg cgc gaa cgc	384
Tyr Arg Ser Phe Ala Asn Ala Ile Leu Arg Arg Phe Leu Arg Glu Arg	
115 120 125	
gac aag ctt gcg gct tcc tgc aaa aaa gac gat gtg gcg aaa cac aac	432
Asp Lys Leu Ala Ala Ser Cys Lys Lys Asp Asp Val Ala Lys His Asn	
130 135 140	
ctg ccg ctg tgg tgg gtg gct tac ttg aaa aac cat tat ccg aaa cac	480
Leu Pro Leu Trp Trp Val Ala Tyr Leu Lys Asn His Tyr Pro Lys His	
145 150 155 160	
tgg cac aac atc gcc gcc gcg ctg caa tcc cat ccg ccg atg acg ttg	528
Trp His Asn Ile Ala Ala Ala Leu Gln Ser His Pro Pro Met Thr Leu	
165 170 175	
cgc gtc aac cgc cga cac ggc aac gcc gaa agc tat ttg gaa aaa ctg	576



Arg	Val	Asn	Arg	Arg	His	Gly	Asn	Ala	Glu	Ser	Tyr	Leu	Glu	Lys	Leu	
		180						185					190			
gct	gcg	gaa	ggc	att	gcg	gca	aag	gcg	ttg	gac	gaa	tat	gcg	gtt	acg	624
Ala	Ala	Glu	Gly	Ile	Ala	Ala	Lys	Ala	Leu	Asp	Glu	Tyr	Ala	Val	Thr	
		195					200					205				
ttg	gaa	gaa	gcc	gtg	ccg	gtg	aac	cgc	ctg	ccc	ggg	ttt	tca	gac	ggc	672
Leu	Glu	Glu	Ala	Val	Pro	Val	Asn	Arg	Leu	Pro	Gly	Phe	Ser	Asp	Gly	
	210						215				220					
att	gtt	tcg	gta	cag	gac	ttc	ggc	gcg	cag	cag	gcg	gcg	tat	ctc	ctt	720
Ile	Val	Ser	Val	Gln	Asp	Phe	Gly	Ala	Gln	Gln	Ala	Ala	Tyr	Leu	Leu	
225					230					235					240	
aac	ccg	aaa	gac	ggc	gaa	cgg	att	ttg	gac	gcg	tgc	gcc	gcg	ccg	ggc	768
Asn	Pro	Lys	Asp	Gly	Glu	Arg	Ile	Leu	Asp	Ala	Cys	Ala	Ala	Pro	Gly	
			245						250					255		
ggc	aag	acg	ggg	cat	atc	ttg	gaa	ctg	gcg	gat	tgc	cgc	gtt	acc	gcc	816
Gly	Lys	Thr	Gly	His	Ile	Leu	Glu	Leu	Ala	Asp	Cys	Arg	Val	Thr	Ala	
			260						265					270		
ttg	gac	att	gat	gca	ggc	cgt	ctg	aag	cgt	gtg	gag	gac	aat	atc	gcc	864
Leu	Asp	Ile	Asp	Ala	Gly	Arg	Leu	Lys	Arg	Val	Glu	Asp	Asn	Ile	Ala	
		275					280					285				
cgt	ttg	ggc	ttt	cag	acg	gca	tcg	gcg	gcg	tgt	gcc	gat	gcg	cgg	gat	912
Arg	Leu	Gly	Phe	Gln	Thr	Ala	Ser	Ala	Ala	Cys	Ala	Asp	Ala	Arg	Asp	
	290						295				300					
ttg	gcg	gcg	tgg	tat	gat	gga	aag	cct	ttc	gac	aca	atc	ctt	gcc	gac	960
Leu	Ala	Ala	Trp	Tyr	Asp	Gly	Lys	Pro	Phe	Asp	Thr	Ile	Leu	Ala	Asp	
305						310				315				320		
gtg	cca	tgc	acc	gct	tcc	ggc	gtg	gcg	cgg	cgc	aat	ccc	gac	gtg	aaa	1008
Val	Pro	Cys	Thr	Ala	Ser	Gly	Val	Ala	Arg	Arg	Asn	Pro	Asp	Val	Lys	
				325					330				335			
tgg	ctg	cgc	cgt	ccg	acc	gac	gcg	ctc	aaa	acc	gcc	cgc	cag	cag	gaa	1056
Trp	Leu	Arg	Arg	Pro	Thr	Asp	Ala	Leu	Lys	Thr	Ala	Arg	Gln	Gln	Glu	
			340					345					350			
gcc	ctg	ctg	gac	gca	ctt	tgg	cag	acg	ctg	aaa	cag	ggc	ggc	aga	atg	1104
Ala	Leu	Leu	Asp	Ala	Leu	Trp	Gln	Thr	Leu	Lys	Gln	Gly	Gly	Arg	Met	
		355					360					365				
ctg	ctt	gcc	acc	tgt	tcc	gtg	ttc	gtc	gaa	gaa	aac	gac	ggg	caa	ttg	1152

Leu Leu Ala Thr Cys Ser Val Phe Val Glu Glu Asn Asp Gly Gln Leu  
 370 375 380

caa aaa ttc ctc aac cgc cat gcc gat gcc gaa ccg atc gaa tcg cgg 1200  
 Gln Lys Phe Leu Asn Arg His Ala Asp Ala Glu Pro Ile Glu Ser Arg  
 385 390 395 400

gtg ctt tta ccg aac aaa cac caa gat ggc ttt tat tac gcg ctt att 1248  
 Val Leu Leu Pro Asn Lys His Gln Asp Gly Phe Tyr Tyr Ala Leu Ile  
 405 410 415

caa aag cat 1257  
 Gln Lys His

<210> 168  
 <211> 419  
 <212> PRT  
 <213> Neisseria meningitidis

<400> 168  
 Met Ser Met Ala Leu Ala Gln Lys Leu Ala Ala Asp Ser Ile Ala Ala  
 1 5 10 15

Val Ala Glu Gly Arg Asn Leu Gln Asp Val Leu Ala Gln Ile Arg Thr  
 20 25 30

Ala His Pro Asp Leu Thr Ala Gln Glu Asn Gly Ala Leu Gln Asp Ile  
 35 40 45

Ala Tyr Gly Cys Gln Arg Tyr Leu Gly Ser Leu Lys His Met Leu Ala  
 50 55 60

Gln Met Leu Lys Lys Pro Ile Gly Asn Pro Gln Leu Glu Ser Leu Leu  
 65 70 75 80

Leu Ala Ala Leu Tyr Gln Leu His Tyr Thr Arg Asn Ala Pro His Ala  
 85 90 95

Val Val Asn Glu Ala Val Glu Ser Ile Ala Lys Ile Gly Arg Gly Gln  
 100 105 110

Tyr Arg Ser Phe Ala Asn Ala Ile Leu Arg Arg Phe Leu Arg Glu Arg  
 115 120 125

Asp Lys Leu Ala Ala Ser Cys Lys Lys Asp Asp Val Ala Lys His Asn  
 130 135 140

Leu Pro Leu Trp Trp Val Ala Tyr Leu Lys Asn His Tyr Pro Lys His  
 145 150 155 160  
 Trp His Asn Ile Ala Ala Ala Leu Gln Ser His Pro Pro Met Thr Leu  
 165 170 175  
 Arg Val Asn Arg Arg His Gly Asn Ala Glu Ser Tyr Leu Glu Lys Leu  
 180 185 190  
 Ala Ala Glu Gly Ile Ala Ala Lys Ala Leu Asp Glu Tyr Ala Val Thr  
 195 200 205  
 Leu Glu Glu Ala Val Pro Val Asn Arg Leu Pro Gly Phe Ser Asp Gly  
 210 215 220  
 Ile Val Ser Val Gln Asp Phe Gly Ala Gln Gln Ala Ala Tyr Leu Leu  
 225 230 235 240  
 Asn Pro Lys Asp Gly Glu Arg Ile Leu Asp Ala Cys Ala Ala Pro Gly  
 245 250 255  
 Gly Lys Thr Gly His Ile Leu Glu Leu Ala Asp Cys Arg Val Thr Ala  
 260 265 270  
 Leu Asp Ile Asp Ala Gly Arg Leu Lys Arg Val Glu Asp Asn Ile Ala  
 275 280 285  
 Arg Leu Gly Phe Gln Thr Ala Ser Ala Ala Cys Ala Asp Ala Arg Asp  
 290 295 300  
 Leu Ala Ala Trp Tyr Asp Gly Lys Pro Phe Asp Thr Ile Leu Ala Asp  
 305 310 315 320  
 Val Pro Cys Thr Ala Ser Gly Val Ala Arg Arg Asn Pro Asp Val Lys  
 325 330 335  
 Trp Leu Arg Arg Pro Thr Asp Ala Leu Lys Thr Ala Arg Gln Gln Glu  
 340 345 350  
 Ala Leu Leu Asp Ala Leu Trp Gln Thr Leu Lys Gln Gly Gly Arg Met  
 355 360 365  
 Leu Leu Ala Thr Cys Ser Val Phe Val Glu Glu Asn Asp Gly Gln Leu  
 370 375 380  
 Gln Lys Phe Leu Asn Arg His Ala Asp Ala Glu Pro Ile Glu Ser Arg  
 385 390 395 400

Val Leu Leu Pro Asn Lys His Gln Asp Gly Phe Tyr Tyr Ala Leu Ile  
 405 410 415

Gln Lys His

<210> 169

<211> 804

<212> DNA

<213> Neisseria meningitidis

<220>

<221> CDS

<222> (1)..(804)

<400> 169

atg aat atg aaa aaa tgg att gcc gcc gcc ctt gcc tgt tcc gcg ctc	48
Met Asn Met Lys Lys Trp Ile Ala Ala Ala Leu Ala Cys Ser Ala Leu	
1 5 10 15	
gcg ctg tct gcc tgc ggc ggt cag ggt aaa gat gcc gcc gcg ccc gcc	96
Ala Leu Ser Ala Cys Gly Gly Gln Gly Lys Asp Ala Ala Ala Pro Ala	
20 25 30	
gca aat ccc gac aaa gtg tac cgc gtg gct tcc aac gcc gag ttt gcc	144
Ala Asn Pro Asp Lys Val Tyr Arg Val Ala Ser Asn Ala Glu Phe Ala	
35 40 45	
ccc ttt gaa tct tta gac tcg aaa ggc aat gtc gaa ggt ttc gat gtg	192
Pro Phe Glu Ser Leu Asp Ser Lys Gly Asn Val Glu Gly Phe Asp Val	
50 55 60	
gat ttg atg aac gcg atg gcg aag gcg ggc aat ttt aaa atc gaa ttc	240
Asp Leu Met Asn Ala Met Ala Lys Ala Gly Asn Phe Lys Ile Glu Phe	
65 70 75 80	
aaa cac cag ccg tgg gac agc ctt ttc ccc gcc ttg aac aac ggc gat	288
Lys His Gln Pro Trp Asp Ser Leu Phe Pro Ala Leu Asn Asn Gly Asp	
85 90 95	
gcg gac gtt gtg atg tcg ggc gta acc att acc gac gac cgc aaa cag	336
Ala Asp Val Val Met Ser Gly Val Thr Ile Thr Asp Asp Arg Lys Gln	
100 105 110	
tct atg gac ttc agc gac ccg tat ttt gaa atc acc caa gtc gtc ctc	384
Ser Met Asp Phe Ser Asp Pro Tyr Phe Glu Ile Thr Gln Val Val Leu	

115	120	125	
gtt ccg aaa ggc aaa aaa ata tct tct tcc gaa gat ttg aaa aac atg			432
Val Pro Lys Gly Lys Lys Ile Ser Ser Ser Glu Asp Leu Lys Asn Met			
130	135	140	
aac aaa gtc ggc gtg gta acc ggc tac acg ggc gat ttc tcc gta tcc			480
Asn Lys Val Gly Val Val Thr Gly Tyr Thr Gly Asp Phe Ser Val Ser			
145	150	155	160
aaa ctc ttg ggc aac gac aac ccg aaa atc gcg cgc ttt gaa aac gtt			528
Lys Leu Leu Gly Asn Asp Asn Pro Lys Ile Ala Arg Phe Glu Asn Val			
	165	170	175
ccc ctg att atc aaa gaa ctg gaa aac ggc ggc ttg gat tcc gtg gtc			576
Pro Leu Ile Ile Lys Glu Leu Glu Asn Gly Gly Leu Asp Ser Val Val			
	180	185	190
agc gac agc gca gtc atc gcc aat tat gtg aaa aac aat ccg acc aaa			624
Ser Asp Ser Ala Val Ile Ala Asn Tyr Val Lys Asn Asn Pro Thr Lys			
	195	200	205
ggg atg gac ttc gtt acc ctg ccc gac ttc acc acc gaa cac tac ggc			672
Gly Met Asp Phe Val Thr Leu Pro Asp Phe Thr Thr Glu His Tyr Gly			
	210	215	220
atc gcg gta cgc aaa ggc gac gaa gca acc gtc aaa atg ctg aac gat			720
Ile Ala Val Arg Lys Gly Asp Glu Ala Thr Val Lys Met Leu Asn Asp			
	225	230	235
gcg ttg aaa aaa gta cgc gaa agc ggc gaa tac gac aaa atc tac gcc			768
Ala Leu Lys Lys Val Arg Glu Ser Gly Glu Tyr Asp Lys Ile Tyr Ala			
	245	250	255
aaa tat ttt gca aaa gaa gac gga cag gcc gca aaa			804
Lys Tyr Phe Ala Lys Glu Asp Gly Gln Ala Ala Lys			
	260	265	

&lt;210&gt; 170

&lt;211&gt; 268

&lt;212&gt; PRT

&lt;213&gt; Neisseria meningitidis

&lt;400&gt; 170

Met Asn Met Lys Lys Trp Ile Ala Ala Ala Leu Ala Cys Ser Ala Leu

1

5

10

15

Ala Leu Ser Ala Cys Gly Gly Gln Gly Lys Asp Ala Ala Ala Pro Ala  
                   20                                  25                                  30

Ala Asn Pro Asp Lys Val Tyr Arg Val Ala Ser Asn Ala Glu Phe Ala  
                   35                                  40                                  45

Pro Phe Glu Ser Leu Asp Ser Lys Gly Asn Val Glu Gly Phe Asp Val  
                   50                                  55                                  60

Asp Leu Met Asn Ala Met Ala Lys Ala Gly Asn Phe Lys Ile Glu Phe  
                   65                                  70                                  75                                  80

Lys His Gln Pro Trp Asp Ser Leu Phe Pro Ala Leu Asn Asn Gly Asp  
                                   85                                  90                                  95

Ala Asp Val Val Met Ser Gly Val Thr Ile Thr Asp Asp Arg Lys Gln  
                                   100                                  105                                  110

Ser Met Asp Phe Ser Asp Pro Tyr Phe Glu Ile Thr Gln Val Val Leu  
                   115                                  120                                  125

Val Pro Lys Gly Lys Lys Ile Ser Ser Ser Glu Asp Leu Lys Asn Met  
                   130                                  135                                  140

Asn Lys Val Gly Val Val Thr Gly Tyr Thr Gly Asp Phe Ser Val Ser  
                   145                                  150                                  155                                  160

Lys Leu Leu Gly Asn Asp Asn Pro Lys Ile Ala Arg Phe Glu Asn Val  
                                   165                                  170                                  175

Pro Leu Ile Ile Lys Glu Leu Glu Asn Gly Gly Leu Asp Ser Val Val  
                                   180                                  185                                  190

Ser Asp Ser Ala Val Ile Ala Asn Tyr Val Lys Asn Asn Pro Thr Lys  
                   195                                  200                                  205

Gly Met Asp Phe Val Thr Leu Pro Asp Phe Thr Thr Glu His Tyr Gly  
                   210                                  215                                  220

Ile Ala Val Arg Lys Gly Asp Glu Ala Thr Val Lys Met Leu Asn Asp  
                   225                                  230                                  235                                  240

Ala Leu Lys Lys Val Arg Glu Ser Gly Glu Tyr Asp Lys Ile Tyr Ala  
                                   245                                  250                                  255

Lys Tyr Phe Ala Lys Glu Asp Gly Gln Ala Ala Lys  
                   260                                  265

&lt;210&gt; 171

&lt;211&gt; 864

&lt;212&gt; DNA

<213> *Neisseria meningitidis*

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(864)

&lt;400&gt; 171

atg	aaa	gca	aaa	atc	ctg	act	tcc	gtt	gca	ctg	ctt	gcc	tgt	tcc	ggc	48
Met	Lys	Ala	Lys	Ile	Leu	Thr	Ser	Val	Ala	Leu	Leu	Ala	Cys	Ser	Gly	
1				5					10					15		

agc	ctg	ttt	gcc	caa	acg	ctg	gca	acc	gtc	aac	ggc	cag	aaa	atc	gac	96
Ser	Leu	Phe	Ala	Gln	Thr	Leu	Ala	Thr	Val	Asn	Gly	Gln	Lys	Ile	Asp	
			20					25					30			

agt	tcc	gtc	att	gat	gcg	cag	gtt	gcc	gca	ttc	cgt	gcg	gaa	aac	agc	144
Ser	Ser	Val	Ile	Asp	Ala	Gln	Val	Ala	Ala	Phe	Arg	Ala	Glu	Asn	Ser	
		35					40					45				

cgt	gcc	gaa	gac	acg	ccg	caa	ctg	cgc	caa	tcc	ctg	ctg	gaa	aac	gaa	192
Arg	Ala	Glu	Asp	Thr	Pro	Gln	Leu	Arg	Gln	Ser	Leu	Leu	Glu	Asn	Glu	
	50					55					60					

gtg	gtc	aac	acc	gtg	gtc	gca	cag	gaa	gtg	aaa	cgc	ctg	aaa	ctc	gac	240
Val	Val	Asn	Thr	Val	Val	Ala	Gln	Glu	Val	Lys	Arg	Leu	Lys	Leu	Asp	
65					70					75				80		

cgg	tcg	gca	gag	ttt	aaa	aat	gcg	ctt	gcc	aaa	ttg	cgt	gcc	gaa	gcg	288
Arg	Ser	Ala	Glu	Phe	Lys	Asn	Ala	Leu	Ala	Lys	Leu	Arg	Ala	Glu	Ala	
			85						90					95		

aaa	aag	tcg	ggc	gac	gac	aag	aaa	ccg	tcc	ttc	aaa	acc	gtt	tgg	cag	336
Lys	Lys	Ser	Gly	Asp	Asp	Lys	Lys	Pro	Ser	Phe	Lys	Thr	Val	Trp	Gln	
			100					105					110			

gcg	gta	aaa	tat	ggc	ttg	aac	ggc	gag	gca	tac	gcg	ctg	cat	atc	gcc	384
Ala	Val	Lys	Tyr	Gly	Leu	Asn	Gly	Glu	Ala	Tyr	Ala	Leu	His	Ile	Ala	
		115				120					125					

aaa	acc	caa	ccg	gtt	tcc	gag	cag	gaa	gta	aaa	gcc	gca	tat	gac	aat	432
Lys	Thr	Gln	Pro	Val	Ser	Glu	Gln	Glu	Val	Lys	Ala	Ala	Tyr	Asp	Asn	
	130					135					140					

atc agc ggt ttt tac aaa ggt acg cag gaa gtc cag ttg ggc gaa atc 480  
 Ile Ser Gly Phe Tyr Lys Gly Thr Gln Glu Val Gln Leu Gly Glu Ile  
 145 150 155 160

ctg acc gac aag gaa gaa aat gca aaa aaa gcg gtt gcc gac ttg aag 528  
 Leu Thr Asp Lys Glu Glu Asn Ala Lys Lys Ala Val Ala Asp Leu Lys  
 165 170 175

gcg aaa aaa ggt ttc gat gcc gtc ttg aaa caa tat tcc ctc aac gac 576  
 Ala Lys Lys Gly Phe Asp Ala Val Leu Lys Gln Tyr Ser Leu Asn Asp  
 180 185 190

cgt acc aaa cag acc ggt gcg ccg gtc gga tat gtg ccg ctg aaa gat 624  
 Arg Thr Lys Gln Thr Gly Ala Pro Val Gly Tyr Val Pro Leu Lys Asp  
 195 200 205

ttg gaa cag ggt gtt ccg ccg ctt tat cag gca att aag gac ttg aaa 672  
 Leu Glu Gln Gly Val Pro Pro Leu Tyr Gln Ala Ile Lys Asp Leu Lys  
 210 215 220

aaa ggc gaa ttt acg gca acg ccg ctg aaa aac ggc gat ttc tac ggc 720  
 Lys Gly Glu Phe Thr Ala Thr Pro Leu Lys Asn Gly Asp Phe Tyr Gly  
 225 230 235 240

gtt tat tat gtc aac gac agc cgc gag gta aaa gtg cct tct ttt gat 768  
 Val Tyr Tyr Val Asn Asp Ser Arg Glu Val Lys Val Pro Ser Phe Asp  
 245 250 255

gaa atg aaa gga cag att gcg ggc aac ctt cag gcg gaa cgg att gac 816  
 Glu Met Lys Gly Gln Ile Ala Gly Asn Leu Gln Ala Glu Arg Ile Asp  
 260 265 270

cgt gcc gtc ggt gca ctg ttg ggc aag gca aac atc aaa cct gca aaa 864  
 Arg Ala Val Gly Ala Leu Leu Gly Lys Ala Asn Ile Lys Pro Ala Lys  
 275 280 285

<210> 172

<211> 288

<212> PRT

<213> Neisseria meningitidis

<400> 172

Met Lys Ala Lys Ile Leu Thr Ser Val Ala Leu Leu Ala Cys Ser Gly  
 1 5 10 15

Ser Leu Phe Ala Gln Thr Leu Ala Thr Val Asn Gly Gln Lys Ile Asp  
 20 25 30



Ser Ser Val Ile Asp Ala Gln Val Ala Ala Phe Arg Ala Glu Asn Ser  
 35 40 45  
 Arg Ala Glu Asp Thr Pro Gln Leu Arg Gln Ser Leu Leu Glu Asn Glu  
 50 55 60  
 Val Val Asn Thr Val Val Ala Gln Glu Val Lys Arg Leu Lys Leu Asp  
 65 70 75 80  
 Arg Ser Ala Glu Phe Lys Asn Ala Leu Ala Lys Leu Arg Ala Glu Ala  
 85 90 95  
 Lys Lys Ser Gly Asp Asp Lys Lys Pro Ser Phe Lys Thr Val Trp Gln  
 100 105 110  
 Ala Val Lys Tyr Gly Leu Asn Gly Glu Ala Tyr Ala Leu His Ile Ala  
 115 120 125  
 Lys Thr Gln Pro Val Ser Glu Gln Glu Val Lys Ala Ala Tyr Asp Asn  
 130 135 140  
 Ile Ser Gly Phe Tyr Lys Gly Thr Gln Glu Val Gln Leu Gly Glu Ile  
 145 150 155 160  
 Leu Thr Asp Lys Glu Glu Asn Ala Lys Lys Ala Val Ala Asp Leu Lys  
 165 170 175  
 Ala Lys Lys Gly Phe Asp Ala Val Leu Lys Gln Tyr Ser Leu Asn Asp  
 180 185 190  
 Arg Thr Lys Gln Thr Gly Ala Pro Val Gly Tyr Val Pro Leu Lys Asp  
 195 200 205  
 Leu Glu Gln Gly Val Pro Pro Leu Tyr Gln Ala Ile Lys Asp Leu Lys  
 210 215 220  
 Lys Gly Glu Phe Thr Ala Thr Pro Leu Lys Asn Gly Asp Phe Tyr Gly  
 225 230 235 240  
 Val Tyr Tyr Val Asn Asp Ser Arg Glu Val Lys Val Pro Ser Phe Asp  
 245 250 255  
 Glu Met Lys Gly Gln Ile Ala Gly Asn Leu Gln Ala Glu Arg Ile Asp  
 260 265 270  
 Arg Ala Val Gly Ala Leu Leu Gly Lys Ala Asn Ile Lys Pro Ala Lys  
 275 280 285

&lt;210&gt; 173

&lt;211&gt; 1794

&lt;212&gt; DNA

<213> *Neisseria meningitidis*

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(1794)

&lt;400&gt; 173

ttg	ccc	cga	att	gcc	atg	ccc	tat	ttc	gcc	ctg	ttt	gac	gat	gcc	gta	48
Leu	Pro	Arg	Ile	Ala	Met	Pro	Tyr	Phe	Ala	Leu	Phe	Asp	Asp	Ala	Val	
1				5					10					15		

agc	ggt	cgc	gca	aaa	cgc	tat	caa	aat	cat	gtg	gaa	agc	cgt	ttt	ttc	96
Ser	Gly	Arg	Ala	Lys	Arg	Tyr	Gln	Asn	His	Val	Glu	Ser	Arg	Phe	Phe	
			20					25					30			

cgt	ccc	gaa	gaa	ctc	gat	gct	ttg	gac	ggc	gcg	ctg	caa	tcg	ggc	tgg	144
Arg	Pro	Glu	Glu	Leu	Asp	Ala	Leu	Asp	Gly	Ala	Leu	Gln	Ser	Gly	Trp	
		35					40					45				

caa	aaa	ggg	ctg	cat	gcc	gtg	ttg	ttt	gca	gac	tac	gga	ttc	ggt	ttg	192
Gln	Lys	Gly	Leu	His	Ala	Val	Leu	Phe	Ala	Asp	Tyr	Gly	Phe	Gly	Leu	
	50					55				60						

ccg	ctg	acg	ggg	gtc	gag	tcc	gaa	cgc	ggc	ggc	aac	ctt	gcc	ctg	cac	240
Pro	Leu	Thr	Gly	Val	Glu	Ser	Glu	Arg	Gly	Gly	Asn	Leu	Ala	Leu	His	
	65					70				75					80	

tgg	ttt	gcc	gac	tgc	gcc	gac	acc	gat	gcc	gca	agc	tgg	ctt	gcc	cga	288
Trp	Phe	Ala	Asp	Cys	Ala	Asp	Thr	Asp	Ala	Ala	Ser	Trp	Leu	Ala	Arg	
				85					90					95		

cac	tca	gac	ggc	ctc	ccc	gcc	ggc	att	tcc	acg	ccg	caa	tcc	tcc	gta	336
His	Ser	Asp	Gly	Leu	Pro	Ala	Gly	Ile	Ser	Thr	Pro	Gln	Ser	Ser	Val	
			100					105						110		

tcc	gaa	gcc	gat	tac	ctc	gac	cat	atc	cgc	caa	atc	cac	gaa	gcc	atc	384
Ser	Glu	Ala	Asp	Tyr	Leu	Asp	His	Ile	Arg	Gln	Ile	His	Glu	Ala	Ile	
		115					120					125				

cga	cgc	ggc	gac	acc	tat	caa	atc	aac	tac	act	acc	cgc	ctg	cac	ctg	432
Arg	Arg	Gly	Asp	Thr	Tyr	Gln	Ile	Asn	Tyr	Thr	Thr	Arg	Leu	His	Leu	
	130						135					140				

caa gcc tac ggc aat ccc gtc aaa ctt tac caa cgc ctg cgc cag ccc	480
Gln Ala Tyr Gly Asn Pro Val Lys Leu Tyr Gln Arg Leu Arg Gln Pro	
145 150 155 160	
gtc ccc tat gcc gtt ttg tcc cac ctg ccc gat gca caa ggg caa tcc	528
Val Pro Tyr Ala Val Leu Ser His Leu Pro Asp Ala Gln Gly Gln Ser	
165 170 175	
gcg tgg acg ctg tgt ttc tcg ccc gaa ctc ttc ctc aaa atc ggt tcg	576
Ala Trp Thr Leu Cys Phe Ser Pro Glu Leu Phe Leu Lys Ile Gly Ser	
180 185 190	
gac ggc acc atc agc acc gaa ccg atg aaa ggc acc gcg ccg att ttg	624
Asp Gly Thr Ile Ser Thr Glu Pro Met Lys Gly Thr Ala Pro Ile Leu	
195 200 205	
ggc gac gga caa gac gaa cgc cgc gcc gcc gag ttg caa gca gac ccg	672
Gly Asp Gly Gln Asp Glu Arg Arg Ala Ala Glu Leu Gln Ala Asp Pro	
210 215 220	
aaa aac cgc gcc gaa aac gtg atg att gtc gat ttg ctg cgt aac gac	720
Lys Asn Arg Ala Glu Asn Val Met Ile Val Asp Leu Leu Arg Asn Asp	
225 230 235 240	
ctc ggc aaa atc gcc caa acc ggc aca gta tgc gta ccc gaa ccg ttt	768
Leu Gly Lys Ile Ala Gln Thr Gly Thr Val Cys Val Pro Glu Pro Phe	
245 250 255	
aaa gta tcg cgt ttc ggc agc gtt tgg cag atg acc agc acc atc caa	816
Lys Val Ser Arg Phe Gly Ser Val Trp Gln Met Thr Ser Thr Ile Gln	
260 265 270	
gcc caa gcc ttg ccg cac acc tcg ttc gcc gac atc ctc cgc gcc gcc	864
Ala Gln Ala Leu Pro His Thr Ser Phe Ala Asp Ile Leu Arg Ala Ala	
275 280 285	
ttc ccc tgc ggc agc atc acc ggc gcg ccc aaa aaa atg agt atg cag	912
Phe Pro Cys Gly Ser Ile Thr Gly Ala Pro Lys Lys Met Ser Met Gln	
290 295 300	
att atc gaa tcg ctc gaa gcc gaa gcg cgc gga ctt tat acg ggc agc	960
Ile Ile Glu Ser Leu Glu Ala Glu Ala Arg Gly Leu Tyr Thr Gly Ser	
305 310 315 320	
atc ggc tat ttg aac ccg tgt tcc ggc ggc ttg ggg ttt gaa ggc acg	1008
Ile Gly Tyr Leu Asn Pro Cys Ser Gly Gly Leu Gly Phe Glu Gly Thr	
325 330 335	

ttc aac gtc gtt atc cgc acc ttg tcg ctc acg ccg ctt tca gac ggc	1056
Phe Asn Val Val Ile Arg Thr Leu Ser Leu Thr Pro Leu Ser Asp Gly	
340 345 350	
att tat caa ggc gtg tac ggt gtc ggt tcc ggc atc gtc atc gac agc	1104
Ile Tyr Gln Gly Val Tyr Gly Val Gly Ser Gly Ile Val Ile Asp Ser	
355 360 365	
gac cct gcc gcc gaa tat cgg gaa tgc ggc tgg aaa gcc cgt ttc ctc	1152
Asp Pro Ala Ala Glu Tyr Arg Glu Cys Gly Trp Lys Ala Arg Phe Leu	
370 375 380	
aac gaa ttg cgc ccc gac ttc ggc att ttt gaa acc ctg cgc gtg gaa	1200
Asn Glu Leu Arg Pro Asp Phe Gly Ile Phe Glu Thr Leu Arg Val Glu	
385 390 395 400	
aac gga cgc tgc gcc ctg ctc gac cgc cac cta tgc cgt ctg aaa acc	1248
Asn Gly Arg Cys Ala Leu Leu Asp Arg His Leu Cys Arg Leu Lys Thr	
405 410 415	
tcc gcc caa gcc ctc aac ctg ccc ctg ccc gac ggt tgc gaa aat caa	1296
Ser Ala Gln Ala Leu Asn Leu Pro Leu Pro Asp Gly Cys Glu Asn Gln	
420 425 430	
atc aaa caa tac atc gca cgc ttg ccc gac ggc gcg ttc cgc atc aaa	1344
Ile Lys Gln Tyr Ile Ala Arg Leu Pro Asp Gly Ala Phe Arg Ile Lys	
435 440 445	
gcc ctg ctc gct tca gac ggc atc agc ctg tcc cgc gcc gtt tta aac	1392
Ala Leu Leu Ala Ser Asp Gly Ile Ser Leu Ser Arg Ala Val Leu Asn	
450 455 460	
cgt ctg acc gac aaa caa cgc gtc atc att tcg ccg acc atc ctg ccc	1440
Arg Leu Thr Asp Lys Gln Arg Val Ile Ile Ser Pro Thr Ile Leu Pro	
465 470 475 480	
gca caa aac tac ctg cgc cgc ttc aaa acc acc tgc cgc acc gtc ttc	1488
Ala Gln Asn Tyr Leu Arg Arg Phe Lys Thr Thr Cys Arg Thr Val Phe	
485 490 495	
gac caa gcg tgg caa acc gcc gaa aca caa ggc gcg ttc gac agc ctg	1536
Asp Gln Ala Trp Gln Thr Ala Glu Thr Gln Gly Ala Phe Asp Ser Leu	
500 505 510	
ttt ttc aat tca gac ggc atc ctg ctc gaa ggc ggc aga agc aac gtg	1584
Phe Phe Asn Ser Asp Gly Ile Leu Leu Glu Gly Gly Arg Ser Asn Val	
515 520 525	

ttc gtc aaa cat cgc gga caa tgg ctc acg ccc tct tta gat tta gac 1632  
 Phe Val Lys His Arg Gly Gln Trp Leu Thr Pro Ser Leu Asp Leu Asp  
 530 535 540

att tta aac ggc ata atg cgc caa gcc gtg ttg gac gaa ccg caa aaa 1680  
 Ile Leu Asn Gly Ile Met Arg Gln Ala Val Leu Asp Glu Pro Gln Lys  
 545 550 555 560

tat ttg caa aca aat caa gta atc gaa aca cac atc aca caa aaa aca 1728  
 Tyr Leu Gln Thr Asn Gln Val Ile Glu Thr His Ile Thr Gln Lys Thr  
 565 570 575

ctg caa gaa gcc gaa gaa atc cgc ctc tcc aac gcc ttg cgc ggc gta 1776  
 Leu Gln Glu Ala Glu Glu Ile Arg Leu Ser Asn Ala Leu Arg Gly Val  
 580 585 590

ttt gcc gcc gcc ctt gcc 1794  
 Phe Ala Ala Ala Leu Ala  
 595

<210> 174

<211> 598

<212> PRT

<213> Neisseria meningitidis

<400> 174

Leu Pro Arg Ile Ala Met Pro Tyr Phe Ala Leu Phe Asp Asp Ala Val  
 1 5 10 15

Ser Gly Arg Ala Lys Arg Tyr Gln Asn His Val Glu Ser Arg Phe Phe  
 20 25 30

Arg Pro Glu Glu Leu Asp Ala Leu Asp Gly Ala Leu Gln Ser Gly Trp  
 35 40 45

Gln Lys Gly Leu His Ala Val Leu Phe Ala Asp Tyr Gly Phe Gly Leu  
 50 55 60

Pro Leu Thr Gly Val Glu Ser Glu Arg Gly Gly Asn Leu Ala Leu His  
 65 70 75 80

Trp Phe Ala Asp Cys Ala Asp Thr Asp Ala Ala Ser Trp Leu Ala Arg  
 85 90 95

His Ser Asp Gly Leu Pro Ala Gly Ile Ser Thr Pro Gln Ser Ser Val  
 100 105 110

Ser Glu Ala Asp Tyr Leu Asp His Ile Arg Gln Ile His Glu Ala Ile  
 115 120 125  
 Arg Arg Gly Asp Thr Tyr Gln Ile Asn Tyr Thr Thr Arg Leu His Leu  
 130 135 140  
 Gln Ala Tyr Gly Asn Pro Val Lys Leu Tyr Gln Arg Leu Arg Gln Pro  
 145 150 155 160  
 Val Pro Tyr Ala Val Leu Ser His Leu Pro Asp Ala Gln Gly Gln Ser  
 165 170 175  
 Ala Trp Thr Leu Cys Phe Ser Pro Glu Leu Phe Leu Lys Ile Gly Ser  
 180 185 190  
 Asp Gly Thr Ile Ser Thr Glu Pro Met Lys Gly Thr Ala Pro Ile Leu  
 195 200 205  
 Gly Asp Gly Gln Asp Glu Arg Arg Ala Ala Glu Leu Gln Ala Asp Pro  
 210 215 220  
 Lys Asn Arg Ala Glu Asn Val Met Ile Val Asp Leu Leu Arg Asn Asp  
 225 230 235 240  
 Leu Gly Lys Ile Ala Gln Thr Gly Thr Val Cys Val Pro Glu Pro Phe  
 245 250 255  
 Lys Val Ser Arg Phe Gly Ser Val Trp Gln Met Thr Ser Thr Ile Gln  
 260 265 270  
 Ala Gln Ala Leu Pro His Thr Ser Phe Ala Asp Ile Leu Arg Ala Ala  
 275 280 285  
 Phe Pro Cys Gly Ser Ile Thr Gly Ala Pro Lys Lys Met Ser Met Gln  
 290 295 300  
 Ile Ile Glu Ser Leu Glu Ala Glu Ala Arg Gly Leu Tyr Thr Gly Ser  
 305 310 315 320  
 Ile Gly Tyr Leu Asn Pro Cys Ser Gly Gly Leu Gly Phe Glu Gly Thr  
 325 330 335  
 Phe Asn Val Val Ile Arg Thr Leu Ser Leu Thr Pro Leu Ser Asp Gly  
 340 345 350  
 Ile Tyr Gln Gly Val Tyr Gly Val Gly Ser Gly Ile Val Ile Asp Ser  
 355 360 365

Asp Pro Ala Ala Glu Tyr Arg Glu Cys Gly Trp Lys Ala Arg Phe Leu  
 370 375 380

Asn Glu Leu Arg Pro Asp Phe Gly Ile Phe Glu Thr Leu Arg Val Glu  
 385 390 395 400

Asn Gly Arg Cys Ala Leu Leu Asp Arg His Leu Cys Arg Leu Lys Thr  
 405 410 415

Ser Ala Gln Ala Leu Asn Leu Pro Leu Pro Asp Gly Cys Glu Asn Gln  
 420 425 430

Ile Lys Gln Tyr Ile Ala Arg Leu Pro Asp Gly Ala Phe Arg Ile Lys  
 435 440 445

Ala Leu Leu Ala Ser Asp Gly Ile Ser Leu Ser Arg Ala Val Leu Asn  
 450 455 460

Arg Leu Thr Asp Lys Gln Arg Val Ile Ile Ser Pro Thr Ile Leu Pro  
 465 470 475 480

Ala Gln Asn Tyr Leu Arg Arg Phe Lys Thr Thr Cys Arg Thr Val Phe  
 485 490 495

Asp Gln Ala Trp Gln Thr Ala Glu Thr Gln Gly Ala Phe Asp Ser Leu  
 500 505 510

Phe Phe Asn Ser Asp Gly Ile Leu Leu Glu Gly Gly Arg Ser Asn Val  
 515 520 525

Phe Val Lys His Arg Gly Gln Trp Leu Thr Pro Ser Leu Asp Leu Asp  
 530 535 540

Ile Leu Asn Gly Ile Met Arg Gln Ala Val Leu Asp Glu Pro Gln Lys  
 545 550 555 560

Tyr Leu Gln Thr Asn Gln Val Ile Glu Thr His Ile Thr Gln Lys Thr  
 565 570 575

Leu Gln Glu Ala Glu Glu Ile Arg Leu Ser Asn Ala Leu Arg Gly Val  
 580 585 590

Phe Ala Ala Ala Leu Ala  
 595

<210> 175  
 <211> 279  
 <212> DNA  
 <213> *Neisseria meningitidis*

<220>  
 <221> CDS  
 <222> (1)..(279)

<400> 175  
 ttg caa aac ttt cgg aaa ccc aat atg cag acc gtt acc atg tac aca 48  
 Leu Gln Asn Phe Arg Lys Pro Asn Met Gln Thr Val Thr Met Tyr Thr  
 1 5 10 15  
 ggt ccg ttt tgc ccc tac tgc acg atg gcg aaa agg ctg ctg cac gcg 96  
 Gly Pro Phe Cys Pro Tyr Cys Thr Met Ala Lys Arg Leu Leu His Ala  
 20 25 30  
 gca ggt gtc gga cat atc gac gaa atc cgt gtc gat gca agt ccc gaa 144  
 Ala Gly Val Gly His Ile Asp Glu Ile Arg Val Asp Ala Ser Pro Glu  
 35 40 45  
 gcc ttt gcc gaa atg cag cag ctt tcc gga cag cgc agc gtg ccg cag 192  
 Ala Phe Ala Glu Met Gln Gln Leu Ser Gly Gln Arg Ser Val Pro Gln  
 50 55 60  
 att ttc atc ggc gaa acg cac gtc ggc gga ttt acc gac ctc tac cgc 240  
 Ile Phe Ile Gly Glu Thr His Val Gly Gly Phe Thr Asp Leu Tyr Arg  
 65 70 75 80  
 ctc cag cag gaa ggc ggg ctg gac gga ctg ctg aac cct 279  
 Leu Gln Gln Glu Gly Gly Leu Asp Gly Leu Leu Asn Pro  
 85 90

<210> 176  
 <211> 93  
 <212> PRT  
 <213> *Neisseria meningitidis*

<400> 176  
 Leu Gln Asn Phe Arg Lys Pro Asn Met Gln Thr Val Thr Met Tyr Thr  
 1 5 10 15  
 Gly Pro Phe Cys Pro Tyr Cys Thr Met Ala Lys Arg Leu Leu His Ala  
 20 25 30  
 Ala Gly Val Gly His Ile Asp Glu Ile Arg Val Asp Ala Ser Pro Glu



35	40	45
Ala Phe Ala Glu Met Gln Gln Leu Ser Gly Gln Arg Ser Val Pro Gln		
50	55	60
Ile Phe Ile Gly Glu Thr His Val Gly Gly Phe Thr Asp Leu Tyr Arg		
65	70	75
		80
Leu Gln Gln Glu Gly Gly Leu Asp Gly Leu Leu Asn Pro		
85	90	

&lt;210&gt; 177

&lt;211&gt; 2274

&lt;212&gt; DNA

&lt;213&gt; Neisseria meningitidis

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(2274)

&lt;400&gt; 177

atg aca aca tta cat ttc tca ggc ttc ccg cgt gtc ggt gcc ttc cgc	48
Met Thr Thr Leu His Phe Ser Gly Phe Pro Arg Val Gly Ala Phe Arg	
1 5 10 15	
gaa ttg aaa ttc gca caa gaa aaa tac tgg cgc aaa gaa atc agc gag	96
Glu Leu Lys Phe Ala Gln Glu Lys Tyr Trp Arg Lys Glu Ile Ser Glu	
20 25 30	
caa gaa ttg ctg gct gtt gct aaa gac ttg cgc gag aaa aac tgg aaa	144
Gln Glu Leu Leu Ala Val Ala Lys Asp Leu Arg Glu Lys Asn Trp Lys	
35 40 45	
cac cag gcc gct gcc aac gcc gat tac gtt gcc gta ggc gat ttc act	192
His Gln Ala Ala Ala Asn Ala Asp Tyr Val Ala Val Gly Asp Phe Thr	
50 55 60	
ttc tac gac cac atc ctc gac ctg caa gtc gcc acc ggc gcg att ccc	240
Phe Tyr Asp His Ile Leu Asp Leu Gln Val Ala Thr Gly Ala Ile Pro	
65 70 75 80	
gcc cgc ttc ggc ttc gac agc caa aac cta tct ttg gaa caa ttc ttc	288
Ala Arg Phe Gly Phe Asp Ser Gln Asn Leu Ser Leu Glu Gln Phe Phe	
85 90 95	
caa ctg gcg cgc ggt aac aaa gac caa ttc gct atc gaa atg acc aaa	336

Gln	Leu	Ala	Arg	Gly	Asn	Lys	Asp	Gln	Phe	Ala	Ile	Glu	Met	Thr	Lys	
			100					105					110			
tgg	ttc	gac	acc	aac	tac	cac	tac	ttg	gtg	cct	gaa	ttc	cac	gcc	gat	384
Trp	Phe	Asp	Thr	Asn	Tyr	His	Tyr	Leu	Val	Pro	Glu	Phe	His	Ala	Asp	
			115					120					125			
acc	gaa	ttt	aaa	gcc	aat	gcc	aaa	cac	tac	gtt	caa	cag	ctg	caa	gaa	432
Thr	Glu	Phe	Lys	Ala	Asn	Ala	Lys	His	Tyr	Val	Gln	Gln	Leu	Gln	Glu	
			130					135					140			
gcc	caa	gct	ttg	ggc	ctg	aaa	gcc	aaa	ccg	acc	gtt	gtg	ggg	ccg	ttg	480
Ala	Gln	Ala	Leu	Gly	Leu	Lys	Ala	Lys	Pro	Thr	Val	Val	Gly	Pro	Leu	
			145			150					155				160	
act	ttc	ctg	tgg	gtc	ggg	aaa	gaa	aaa	ggc	gcc	gtt	gaa	ttc	gac	cgt	528
Thr	Phe	Leu	Trp	Val	Gly	Lys	Glu	Lys	Gly	Ala	Val	Glu	Phe	Asp	Arg	
				165					170					175		
ctg	agc	ctg	ttg	cct	aaa	ctg	ttg	cct	gtt	tac	gtt	gaa	atc	ctg	act	576
Leu	Ser	Leu	Leu	Pro	Lys	Leu	Leu	Pro	Val	Tyr	Val	Glu	Ile	Leu	Thr	
			180					185						190		
gct	ttg	gtt	gaa	gcc	ggg	gcc	gag	tgg	att	caa	atc	gac	gag	cct	gct	624
Ala	Leu	Val	Glu	Ala	Gly	Ala	Glu	Trp	Ile	Gln	Ile	Asp	Glu	Pro	Ala	
			195					200					205			
ttg	act	gtt	gac	ctg	cct	aaa	gaa	tgg	gta	gaa	gca	tac	aaa	gac	gtt	672
Leu	Thr	Val	Asp	Leu	Pro	Lys	Glu	Trp	Val	Glu	Ala	Tyr	Lys	Asp	Val	
			210					215					220			
tac	gcc	act	ttg	agc	aaa	gta	agt	gcc	aaa	atc	ctg	ctg	agc	act	tac	720
Tyr	Ala	Thr	Leu	Ser	Lys	Val	Ser	Ala	Lys	Ile	Leu	Leu	Ser	Thr	Tyr	
			225			230				235				240		
ttc	ggg	tct	gtt	gcc	gaa	cac	gcc	gca	ttg	ttg	aaa	tcc	ctg	cct	gtt	768
Phe	Gly	Ser	Val	Ala	Glu	His	Ala	Ala	Leu	Leu	Lys	Ser	Leu	Pro	Val	
				245					250					255		
gac	ggc	ctg	cac	atc	gac	ttg	gta	cgc	gct	cct	gaa	caa	ctg	gat	gcg	816
Asp	Gly	Leu	His	Ile	Asp	Leu	Val	Arg	Ala	Pro	Glu	Gln	Leu	Asp	Ala	
			260					265					270			
ttc	gcc	gac	tac	gac	aaa	gtt	ctg	tct	gcc	ggc	gtc	att	gac	ggc	cgc	864
Phe	Ala	Asp	Tyr	Asp	Lys	Val	Leu	Ser	Ala	Gly	Val	Ile	Asp	Gly	Arg	
			275					280					285			
aat	att	tgg	cgc	gcc	aac	ctg	aac	aaa	gtt	ttg	gaa	act	gtt	gag	ctt	912

Asn Ile Trp Arg Ala Asn Leu Asn Lys Val Leu Glu Thr Val Glu Leu	
290	300
ctg caa gcc aaa ctg ggc gac cgt ttg tgg att tcc agc tct tgc tcg	960
Leu Gln Ala Lys Leu Gly Asp Arg Leu Trp Ile Ser Ser Ser Cys Ser	
305	320
ctg ctg cac act ccg ttt gac ttg tca gtt gaa gaa aaa ctg aaa gcc	1008
Leu Leu His Thr Pro Phe Asp Leu Ser Val Glu Glu Lys Leu Lys Ala	
325	335
aac aaa ccc gac ctg tac tct tgg ttg gca ttc acc ctg caa aaa acc	1056
Asn Lys Pro Asp Leu Tyr Ser Trp Leu Ala Phe Thr Leu Gln Lys Thr	
340	350
caa gaa ttg cgc gtc ctg aaa gcc gca ttg aac gaa ggc cgt gat tct	1104
Gln Glu Leu Arg Val Leu Lys Ala Ala Leu Asn Glu Gly Arg Asp Ser	
355	365
gtt gcc gaa gaa ctg gct gcc agc caa gct gct gcc gac tcc cgt gcc	1152
Val Ala Glu Glu Leu Ala Ala Ser Gln Ala Ala Ala Asp Ser Arg Ala	
370	380
aac agc agc gaa atc cac cgt gca gac gtt gcc aaa cgc ctg gcc gat	1200
Asn Ser Ser Glu Ile His Arg Ala Asp Val Ala Lys Arg Leu Ala Asp	
385	400
ttg cct gcc aac gca gac caa cgc aaa tcc cca ttt gcc gac cgt atc	1248
Leu Pro Ala Asn Ala Asp Gln Arg Lys Ser Pro Phe Ala Asp Arg Ile	
405	415
aaa gcg caa caa gca tgg ttg aac ctg cct ctg ctg ccg acg acc aac	1296
Lys Ala Gln Gln Ala Trp Leu Asn Leu Pro Leu Leu Pro Thr Thr Asn	
420	430
atc ggt tct ttc ccg caa act acc gaa atc cgc caa gca cgc gca gcc	1344
Ile Gly Ser Phe Pro Gln Thr Thr Glu Ile Arg Gln Ala Arg Ala Ala	
435	445
ttc aaa aaa ggc gaa ctg tct gcc gcc gat tac gaa gcc gcg atg aaa	1392
Phe Lys Lys Gly Glu Leu Ser Ala Ala Asp Tyr Glu Ala Ala Met Lys	
450	460
aaa gaa atc gcc ttg gtg gtt gaa gag caa gaa aaa ctg gac ttg gac	1440
Lys Glu Ile Ala Leu Val Val Glu Glu Gln Glu Lys Leu Asp Leu Asp	
465	480
gta ctg gta cac ggc gaa gcc gag cgt aac gac atg gtt gaa tac ttc	1488

Val	Leu	Val	His	Gly	Glu	Ala	Glu	Arg	Asn	Asp	Met	Val	Glu	Tyr	Phe	
				485					490					495		
ggc	gaa	ttg	ttg	agc	ggt	ttt	gca	ttc	acc	caa	tat	ggc	tgg	gta	caa	1536
Gly	Glu	Leu	Leu	Ser	Gly	Phe	Ala	Phe	Thr	Gln	Tyr	Gly	Trp	Val	Gln	
			500					505					510			
agc	tac	ggt	tct	cgc	tgc	gtt	aaa	cca	ccg	att	atc	ttc	ggt	gac	gta	1584
Ser	Tyr	Gly	Ser	Arg	Cys	Val	Lys	Pro	Pro	Ile	Ile	Phe	Gly	Asp	Val	
			515				520					525				
agc	cgt	cct	gaa	gcc	atg	acc	gta	gct	tgg	tct	act	tac	gca	caa	agc	1632
Ser	Arg	Pro	Glu	Ala	Met	Thr	Val	Ala	Trp	Ser	Thr	Tyr	Ala	Gln	Ser	
			530			535					540					
ctg	acc	aaa	cgc	ccg	atg	aaa	ggt	atg	ttg	acc	ggc	cct	gta	acc	att	1680
Leu	Thr	Lys	Arg	Pro	Met	Lys	Gly	Met	Leu	Thr	Gly	Pro	Val	Thr	Ile	
545					550				555						560	
ctg	caa	tgg	tct	ttc	gtc	cgc	aac	gat	att	cct	cgc	tct	acc	gtg	tgt	1728
Leu	Gln	Trp	Ser	Phe	Val	Arg	Asn	Asp	Ile	Pro	Arg	Ser	Thr	Val	Cys	
				565				570						575		
aaa	caa	atc	gca	ctg	gct	ctg	aac	gac	gaa	gta	ttg	gat	ctg	gaa	aaa	1776
Lys	Gln	Ile	Ala	Leu	Ala	Leu	Asn	Asp	Glu	Val	Leu	Asp	Leu	Glu	Lys	
			580					585					590			
gca	ggc	atc	aaa	gtc	atc	caa	atc	gac	gaa	cct	gcc	atc	cgc	gaa	ggc	1824
Ala	Gly	Ile	Lys	Val	Ile	Gln	Ile	Asp	Glu	Pro	Ala	Ile	Arg	Glu	Gly	
			595			600						605				
ctg	cct	ttg	aaa	cgt	gcc	gat	tgg	gat	gcc	tac	ctg	aac	tgg	gcc	ggc	1872
Leu	Pro	Leu	Lys	Arg	Ala	Asp	Trp	Asp	Ala	Tyr	Leu	Asn	Trp	Ala	Gly	
			610			615					620					
gaa	tct	ttc	cgc	ctg	tcc	tct	acc	ggt	tgc	gaa	gac	agc	act	caa	atc	1920
Glu	Ser	Phe	Arg	Leu	Ser	Ser	Thr	Gly	Cys	Glu	Asp	Ser	Thr	Gln	Ile	
625					630					635					640	
cac	acc	cat	atg	tgc	tac	tct	gag	ttc	aac	gac	atc	ctg	cct	gcg	att	1968
His	Thr	His	Met	Cys	Tyr	Ser	Glu	Phe	Asn	Asp	Ile	Leu	Pro	Ala	Ile	
			645					650						655		
gct	gca	atg	gat	gcg	gac	gtg	atc	acc	atc	gag	act	tca	cgt	tcc	gac	2016
Ala	Ala	Met	Asp	Ala	Asp	Val	Ile	Thr	Ile	Glu	Thr	Ser	Arg	Ser	Asp	
			660					665					670			
atg	gaa	ctc	ttg	acc	gcg	ttc	ggc	gaa	ttc	aaa	tac	ccg	aac	gac	atc	2064

Met Glu Leu Leu Thr Ala Phe Gly Glu Phe Lys Tyr Pro Asn Asp Ile  
675 680 685

ggc ccg ggg gtt tac gac atc cac agc ccg cgc gta ccg aca gaa gcc 2112  
Gly Pro Gly Val Tyr Asp Ile His Ser Pro Arg Val Pro Thr Glu Ala  
690 695 700

gaa gtg gag cac ctg ttg cgc aaa gcc atc gag gtt gta ccg gtt gaa 2160  
Glu Val Glu His Leu Leu Arg Lys Ala Ile Glu Val Val Pro Val Glu  
705 710 715 720

cgt ctg tgg gtt aac ccg gac tgc ggc ctg aaa aca cgc ggc tgg aaa 2208  
Arg Leu Trp Val Asn Pro Asp Cys Gly Leu Lys Thr Arg Gly Trp Lys  
725 730 735

gaa act ctg gaa caa ctc caa gtg atg atg aac gta acc cac aaa ttg 2256  
Glu Thr Leu Glu Gln Leu Gln Val Met Met Asn Val Thr His Lys Leu  
740 745 750

cgt gcc gaa ttg gcg aaa 2274  
Arg Ala Glu Leu Ala Lys  
755

&lt;210&gt; 178

&lt;211&gt; 758

&lt;212&gt; PRT

&lt;213&gt; Neisseria meningitidis

&lt;400&gt; 178

Met Thr Thr Leu His Phe Ser Gly Phe Pro Arg Val Gly Ala Phe Arg  
1 5 10 15

Glu Leu Lys Phe Ala Gln Glu Lys Tyr Trp Arg Lys Glu Ile Ser Glu  
20 25 30

Gln Glu Leu Leu Ala Val Ala Lys Asp Leu Arg Glu Lys Asn Trp Lys  
35 40 45

His Gln Ala Ala Ala Asn Ala Asp Tyr Val Ala Val Gly Asp Phe Thr  
50 55 60

Phe Tyr Asp His Ile Leu Asp Leu Gln Val Ala Thr Gly Ala Ile Pro  
65 70 75 80

Ala Arg Phe Gly Phe Asp Ser Gln Asn Leu Ser Leu Glu Gln Phe Phe  
85 90 95

Gln Leu Ala Arg Gly Asn Lys Asp Gln Phe Ala Ile Glu Met Thr Lys  
 100 105 110

Trp Phe Asp Thr Asn Tyr His Tyr Leu Val Pro Glu Phe His Ala Asp  
 115 120 125

Thr Glu Phe Lys Ala Asn Ala Lys His Tyr Val Gln Gln Leu Gln Glu  
 130 135 140

Ala Gln Ala Leu Gly Leu Lys Ala Lys Pro Thr Val Val Gly Pro Leu  
 145 150 155 160

Thr Phe Leu Trp Val Gly Lys Glu Lys Gly Ala Val Glu Phe Asp Arg  
 165 170 175

Leu Ser Leu Leu Pro Lys Leu Leu Pro Val Tyr Val Glu Ile Leu Thr  
 180 185 190

Ala Leu Val Glu Ala Gly Ala Glu Trp Ile Gln Ile Asp Glu Pro Ala  
 195 200 205

Leu Thr Val Asp Leu Pro Lys Glu Trp Val Glu Ala Tyr Lys Asp Val  
 210 215 220

Tyr Ala Thr Leu Ser Lys Val Ser Ala Lys Ile Leu Leu Ser Thr Tyr  
 225 230 235 240

Phe Gly Ser Val Ala Glu His Ala Ala Leu Leu Lys Ser Leu Pro Val  
 245 250 255

Asp Gly Leu His Ile Asp Leu Val Arg Ala Pro Glu Gln Leu Asp Ala  
 260 265 270

Phe Ala Asp Tyr Asp Lys Val Leu Ser Ala Gly Val Ile Asp Gly Arg  
 275 280 285

Asn Ile Trp Arg Ala Asn Leu Asn Lys Val Leu Glu Thr Val Glu Leu  
 290 295 300

Leu Gln Ala Lys Leu Gly Asp Arg Leu Trp Ile Ser Ser Ser Cys Ser  
 305 310 315 320

Leu Leu His Thr Pro Phe Asp Leu Ser Val Glu Glu Lys Leu Lys Ala  
 325 330 335

Asn Lys Pro Asp Leu Tyr Ser Trp Leu Ala Phe Thr Leu Gln Lys Thr  
 340 345 350

Gln Glu Leu Arg Val Leu Lys Ala Ala Leu Asn Glu Gly Arg Asp Ser  
 355 360 365  
 Val Ala Glu Glu Leu Ala Ala Ser Gln Ala Ala Ala Asp Ser Arg Ala  
 370 375 380  
 Asn Ser Ser Glu Ile His Arg Ala Asp Val Ala Lys Arg Leu Ala Asp  
 385 390 395 400  
 Leu Pro Ala Asn Ala Asp Gln Arg Lys Ser Pro Phe Ala Asp Arg Ile  
 405 410 415  
 Lys Ala Gln Gln Ala Trp Leu Asn Leu Pro Leu Leu Pro Thr Thr Asn  
 420 425 430  
 Ile Gly Ser Phe Pro Gln Thr Thr Glu Ile Arg Gln Ala Arg Ala Ala  
 435 440 445  
 Phe Lys Lys Gly Glu Leu Ser Ala Ala Asp Tyr Glu Ala Ala Met Lys  
 450 455 460  
 Lys Glu Ile Ala Leu Val Val Glu Glu Gln Glu Lys Leu Asp Leu Asp  
 465 470 475 480  
 Val Leu Val His Gly Glu Ala Glu Arg Asn Asp Met Val Glu Tyr Phe  
 485 490 495  
 Gly Glu Leu Leu Ser Gly Phe Ala Phe Thr Gln Tyr Gly Trp Val Gln  
 500 505 510  
 Ser Tyr Gly Ser Arg Cys Val Lys Pro Pro Ile Ile Phe Gly Asp Val  
 515 520 525  
 Ser Arg Pro Glu Ala Met Thr Val Ala Trp Ser Thr Tyr Ala Gln Ser  
 530 535 540  
 Leu Thr Lys Arg Pro Met Lys Gly Met Leu Thr Gly Pro Val Thr Ile  
 545 550 555 560  
 Leu Gln Trp Ser Phe Val Arg Asn Asp Ile Pro Arg Ser Thr Val Cys  
 565 570 575  
 Lys Gln Ile Ala Leu Ala Leu Asn Asp Glu Val Leu Asp Leu Glu Lys  
 580 585 590  
 Ala Gly Ile Lys Val Ile Gln Ile Asp Glu Pro Ala Ile Arg Glu Gly  
 595 600 605

Leu Pro Leu Lys Arg Ala Asp Trp Asp Ala Tyr Leu Asn Trp Ala Gly  
 610 615 620  
 Glu Ser Phe Arg Leu Ser Ser Thr Gly Cys Glu Asp Ser Thr Gln Ile  
 625 630 635 640  
 His Thr His Met Cys Tyr Ser Glu Phe Asn Asp Ile Leu Pro Ala Ile  
 645 650 655  
 Ala Ala Met Asp Ala Asp Val Ile Thr Ile Glu Thr Ser Arg Ser Asp  
 660 665 670  
 Met Glu Leu Leu Thr Ala Phe Gly Glu Phe Lys Tyr Pro Asn Asp Ile  
 675 680 685  
 Gly Pro Gly Val Tyr Asp Ile His Ser Pro Arg Val Pro Thr Glu Ala  
 690 695 700  
 Glu Val Glu His Leu Leu Arg Lys Ala Ile Glu Val Val Pro Val Glu  
 705 710 715 720  
 Arg Leu Trp Val Asn Pro Asp Cys Gly Leu Lys Thr Arg Gly Trp Lys  
 725 730 735  
 Glu Thr Leu Glu Gln Leu Gln Val Met Met Asn Val Thr His Lys Leu  
 740 745 750  
 Arg Ala Glu Leu Ala Lys  
 755

&lt;210&gt; 179

&lt;211&gt; 867

&lt;212&gt; DNA

&lt;213&gt; Neisseria meningitidis

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(867)

&lt;400&gt; 179

atg aaa ccc ata cgg aaa gcc gtc ttc ccc gtc gca ggg atg gga aca 48  
 Met Lys Pro Ile Arg Lys Ala Val Phe Pro Val Ala Gly Met Gly Thr  
 1 5 10 15

cgc ttc ctg ccc gcc acc aag gca agc ccg aaa gaa atg ctg ccc atc 96  
 Arg Phe Leu Pro Ala Thr Lys Ala Ser Pro Lys Glu Met Leu Pro Ile



20	25	30	
gtc gac aag ccg ctg atc caa tac gcc gta gaa gaa gcc gtg gaa gcc			144
Val Asp Lys Pro Leu Ile Gln Tyr Ala Val Glu Glu Ala Val Glu Ala			
35	40	45	
ggc tgc acg gaa atg gtg ttt gtt acc gga cgc aac aaa cgc agc atc			192
Gly Cys Thr Glu Met Val Phe Val Thr Gly Arg Asn Lys Arg Ser Ile			
50	55	60	
gaa gac cat ttc gac aag gca tac gaa ctc gaa acc gag ttg gaa atg			240
Glu Asp His Phe Asp Lys Ala Tyr Glu Leu Glu Thr Glu Leu Glu Met			
65	70	75	80
cgc cat aaa gac aaa ttg ttg gaa cac gtc cgc aac atc ctg ccg ccg			288
Arg His Lys Asp Lys Leu Leu Glu His Val Arg Asn Ile Leu Pro Pro			
85	90	95	
aac att acc tgc ctc tac atc cgt cag gcg gaa gca ctg ggc ttg gga			336
Asn Ile Thr Cys Leu Tyr Ile Arg Gln Ala Glu Ala Leu Gly Leu Gly			
100	105	110	
cac gcc gtc ttg tgc gcc cgc gcc gcc atc ggc gac gaa ccc ttt gcc			384
His Ala Val Leu Cys Ala Arg Ala Ala Ile Gly Asp Glu Pro Phe Ala			
115	120	125	
gtg att ttg gct gac gat tta atc gat gcc caa aaa ggc gcg ctc aaa			432
Val Ile Leu Ala Asp Asp Leu Ile Asp Ala Gln Lys Gly Ala Leu Lys			
130	135	140	
caa atg gtc gaa gtg tac gaa cgc agc ggc aac agc att ttg ggc gta			480
Gln Met Val Glu Val Tyr Glu Arg Ser Gly Asn Ser Ile Leu Gly Val			
145	150	155	160
gaa act gtc gaa ccg tcg caa acc ggc tca tac ggc atc gtc gaa acc			528
Glu Thr Val Glu Pro Ser Gln Thr Gly Ser Tyr Gly Ile Val Glu Thr			
165	170	175	
gaa cag ctc aaa cag ttc caa cgc att acc ggc att gtc gaa aaa ccc			576
Glu Gln Leu Lys Gln Phe Gln Arg Ile Thr Gly Ile Val Glu Lys Pro			
180	185	190	
aag ccc gaa gac gcg ccc tcc aac ctt gcc gtc gtc gga cgc tac atc			624
Lys Pro Glu Asp Ala Pro Ser Asn Leu Ala Val Val Gly Arg Tyr Ile			
195	200	205	
ctt acc ccg cgc att ttc gac tta ctg acc gga ctg ccg cgc ggc gcg			672
Leu Thr Pro Arg Ile Phe Asp Leu Leu Thr Gly Leu Pro Arg Gly Ala			

210	215	220	
ggc aac gaa atc cag ctt aca gac ggc atc gcc aag ctg ctc gat cac			720
Gly Asn Glu Ile Gln Leu Thr Asp Gly Ile Ala Lys Leu Leu Asp His			
225	230	235	240
gaa ttt gtc cta gcg cac ccc ttt gaa ggc acg cgc tac gac tgc ggc			768
Glu Phe Val Leu Ala His Pro Phe Glu Gly Thr Arg Tyr Asp Cys Gly			
	245	250	255
agc aaa ctg ggc tat ctg gaa gcc acc gtc gcc tac ggc ctg aaa cac			816
Ser Lys Leu Gly Tyr Leu Glu Ala Thr Val Ala Tyr Gly Leu Lys His			
	260	265	270
ccc gaa acc ggc gaa ccc ttc cgc cgc ctt ttg gaa aaa tac cgt acc			864
Pro Glu Thr Gly Glu Pro Phe Arg Arg Leu Leu Glu Lys Tyr Arg Thr			
	275	280	285
gaa			867
Glu			

&lt;210&gt; 180

&lt;211&gt; 289

&lt;212&gt; PRT

&lt;213&gt; Neisseria meningitidis

&lt;400&gt; 180

Met Lys Pro Ile Arg Lys Ala Val Phe Pro Val Ala Gly Met Gly Thr			
1	5	10	15
Arg Phe Leu Pro Ala Thr Lys Ala Ser Pro Lys Glu Met Leu Pro Ile			
	20	25	30
Val Asp Lys Pro Leu Ile Gln Tyr Ala Val Glu Glu Ala Val Glu Ala			
	35	40	45
Gly Cys Thr Glu Met Val Phe Val Thr Gly Arg Asn Lys Arg Ser Ile			
	50	55	60
Glu Asp His Phe Asp Lys Ala Tyr Glu Leu Glu Thr Glu Leu Glu Met			
	65	70	75
Arg His Lys Asp Lys Leu Leu Glu His Val Arg Asn Ile Leu Pro Pro			
	85	90	95
Asn Ile Thr Cys Leu Tyr Ile Arg Gln Ala Glu Ala Leu Gly Leu Gly			
	100	105	110

His Ala Val Leu Cys Ala Arg Ala Ala Ile Gly Asp Glu Pro Phe Ala  
 115 120 125  
 Val Ile Leu Ala Asp Asp Leu Ile Asp Ala Gln Lys Gly Ala Leu Lys  
 130 135 140  
 Gln Met Val Glu Val Tyr Glu Arg Ser Gly Asn Ser Ile Leu Gly Val  
 145 150 155 160  
 Glu Thr Val Glu Pro Ser Gln Thr Gly Ser Tyr Gly Ile Val Glu Thr  
 165 170 175  
 Glu Gln Leu Lys Gln Phe Gln Arg Ile Thr Gly Ile Val Glu Lys Pro  
 180 185 190  
 Lys Pro Glu Asp Ala Pro Ser Asn Leu Ala Val Val Gly Arg Tyr Ile  
 195 200 205  
 Leu Thr Pro Arg Ile Phe Asp Leu Leu Thr Gly Leu Pro Arg Gly Ala  
 210 215 220  
 Gly Asn Glu Ile Gln Leu Thr Asp Gly Ile Ala Lys Leu Leu Asp His  
 225 230 235 240  
 Glu Phe Val Leu Ala His Pro Phe Glu Gly Thr Arg Tyr Asp Cys Gly  
 245 250 255  
 Ser Lys Leu Gly Tyr Leu Glu Ala Thr Val Ala Tyr Gly Leu Lys His  
 260 265 270  
 Pro Glu Thr Gly Glu Pro Phe Arg Arg Leu Leu Glu Lys Tyr Arg Thr  
 275 280 285

Glu

<210> 181

<211> 603

<212> DNA

<213> *Neisseria meningitidis*

<220>

<221> CDS

<222> (1)..(603)

&lt;400&gt; 181

atg	aca	ata	atg	aat	atc	aat	act	tcc	gaa	aat	aaa	gat	gct	gtt	gcc	48
Met	Thr	Ile	Met	Asn	Ile	Asn	Thr	Ser	Glu	Asn	Lys	Asp	Ala	Val	Ala	
1				5					10					15		
gaa	cac	acc	gga	caa	tgg	ttg	gaa	aaa	gcc	gtc	atc	ggg	ctg	aac	ctg	96
Glu	His	Thr	Gly	Gln	Trp	Leu	Glu	Lys	Ala	Val	Ile	Gly	Leu	Asn	Leu	
			20					25					30			
tgt	ccc	ttt	gcc	aaa	gcc	ccc	cac	gtt	aaa	aac	ctt	gtc	cgc	atc	gca	144
Cys	Pro	Phe	Ala	Lys	Ala	Pro	His	Val	Lys	Asn	Leu	Val	Arg	Ile	Ala	
			35				40						45			
atc	agc	gaa	gcc	aaa	cac	ctt	gac	agt	ttt	ttg	gaa	gac	ttg	gac	gaa	192
Ile	Ser	Glu	Ala	Lys	His	Leu	Asp	Ser	Phe	Leu	Glu	Asp	Leu	Asp	Glu	
	50					55					60					
gaa	ctg	cag	cga	ctg	ggc	aat	aca	ccc	gcc	acc	gaa	ctg	gaa	act	acc	240
Glu	Leu	Gln	Arg	Leu	Gly	Asn	Thr	Pro	Ala	Thr	Glu	Leu	Glu	Thr	Thr	
65					70					75					80	
ctg	ctg	gtt	cac	ccg	acc	cta	ttc	ccc	gat	ttc	gac	gta	ttc	aac	gat	288
Leu	Leu	Val	His	Pro	Thr	Leu	Phe	Pro	Asp	Phe	Asp	Val	Phe	Asn	Asp	
				85					90					95		
atg	ctc	gac	att	gcc	gat	gcc	gcc	gtt	gtc	gaa	aac	ggc	ttg	gaa	ggc	336
Met	Leu	Asp	Ile	Ala	Asp	Ala	Ala	Val	Val	Glu	Asn	Gly	Leu	Glu	Gly	
			100					105					110			
atc	atc	caa	atc	gcc	ccg	ttt	cat	ccc	gat	ttc	caa	ttt	gaa	ggc	acg	384
Ile	Ile	Gln	Ile	Ala	Pro	Phe	His	Pro	Asp	Phe	Gln	Phe	Glu	Gly	Thr	
		115					120					125				
gat	tca	gac	gac	atc	ggc	aac	tac	acc	aac	cgt	tct	ccc	tat	ccg	acg	432
Asp	Ser	Asp	Asp	Ile	Gly	Asn	Tyr	Thr	Asn	Arg	Ser	Pro	Tyr	Pro	Thr	
	130					135					140					
ctg	cac	ctc	atc	cgc	gaa	gac	agc	att	gcc	aaa	gcc	gca	caa	gcc	ttt	480
Leu	His	Leu	Ile	Arg	Glu	Asp	Ser	Ile	Ala	Lys	Ala	Ala	Gln	Ala	Phe	
145					150					155					160	
ccc	gac	gct	tcg	gca	ata	ttc	gaa	cgc	aat	atc	gcc	ctg	ctg	gaa	aaa	528
Pro	Asp	Ala	Ser	Ala	Ile	Phe	Glu	Arg	Asn	Ile	Ala	Leu	Leu	Glu	Lys	
				165					170					175		
atg	gga	cat	gag	ggc	tgg	gca	aaa	ctc	ggg	atc	aca	tcc	tgc	cct	tat	576
Met	Gly	His	Glu	Gly	Trp	Ala	Lys	Leu	Gly	Ile	Thr	Ser	Cys	Pro	Tyr	
			180					185					190			

ccg cac aat aag aaa aat att tca aaa  
 Pro His Asn Lys Lys Asn Ile Ser Lys  
           195                          200

603

<210> 182  
 <211> 201  
 <212> PRT  
 <213> Neisseria meningitidis

<400> 182

Met Thr Ile Met Asn Ile Asn Thr Ser Glu Asn Lys Asp Ala Val Ala  
       1                          5                          10                          15

Glu His Thr Gly Gln Trp Leu Glu Lys Ala Val Ile Gly Leu Asn Leu  
                           20                          25                          30

Cys Pro Phe Ala Lys Ala Pro His Val Lys Asn Leu Val Arg Ile Ala  
                           35                          40                          45

Ile Ser Glu Ala Lys His Leu Asp Ser Phe Leu Glu Asp Leu Asp Glu  
           50                          55                          60

Glu Leu Gln Arg Leu Gly Asn Thr Pro Ala Thr Glu Leu Glu Thr Thr  
       65                          70                          75                          80

Leu Leu Val His Pro Thr Leu Phe Pro Asp Phe Asp Val Phe Asn Asp  
                           85                          90                          95

Met Leu Asp Ile Ala Asp Ala Ala Val Val Glu Asn Gly Leu Glu Gly  
                           100                          105                          110

Ile Ile Gln Ile Ala Pro Phe His Pro Asp Phe Gln Phe Glu Gly Thr  
           115                          120                          125

Asp Ser Asp Asp Ile Gly Asn Tyr Thr Asn Arg Ser Pro Tyr Pro Thr  
       130                          135                          140

Leu His Leu Ile Arg Glu Asp Ser Ile Ala Lys Ala Ala Gln Ala Phe  
       145                          150                          155                          160

Pro Asp Ala Ser Ala Ile Phe Glu Arg Asn Ile Ala Leu Leu Glu Lys  
                           165                          170                          175

Met Gly His Glu Gly Trp Ala Lys Leu Gly Ile Thr Ser Cys Pro Tyr  
           180                          185                          190

Pro His Asn Lys Lys Asn Ile Ser Lys  
 195 200

<210> 183

<211> 1338

<212> DNA

<213> Neisseria meningitidis

<220>

<221> CDS

<222> (1)..(1338)

<400> 183

ttg cac acc ctt cta gct ttt atc ttc gcc atc ctg att ttg gtc agc	48
Leu His Thr Leu Leu Ala Phe Ile Phe Ala Ile Leu Ile Leu Val Ser	
1 5 10 15	
ctg cac gaa ttc gga cac tac atc gtc gcc aga ttg tgc ggc gtc aag	96
Leu His Glu Phe Gly His Tyr Ile Val Ala Arg Leu Cys Gly Val Lys	
20 25 30	
gtt gtg cgt ttt tcc gtc ggc ttc ggc aaa ccg ttt ttc acc cga aag	144
Val Val Arg Phe Ser Val Gly Phe Gly Lys Pro Phe Phe Thr Arg Lys	
35 40 45	
cgc ggc gac acc gaa tgg tgc ctc gcc ccg att ccg ttg ggc ggt tac	192
Arg Gly Asp Thr Glu Trp Cys Leu Ala Pro Ile Pro Leu Gly Gly Tyr	
50 55 60	
gtc aaa atg gtc gac acg cgc gaa ggc gaa gta tca gaa gcc gat tta	240
Val Lys Met Val Asp Thr Arg Glu Gly Glu Val Ser Glu Ala Asp Leu	
65 70 75 80	
ccc tac gct ttt gac aaa caa cac ccc gcc aag cgc atc gcc atc gtc	288
Pro Tyr Ala Phe Asp Lys Gln His Pro Ala Lys Arg Ile Ala Ile Val	
85 90 95	
gcc gcc ggc ccg ctg acc aac ctc gca ctg gcg gtt ttg ctg tac gga	336
Ala Ala Gly Pro Leu Thr Asn Leu Ala Leu Ala Val Leu Leu Tyr Gly	
100 105 110	
ctg agc ttt tcc ttc ggc gtt acc gaa ctg cgc ccc tat gtc ggc aca	384
Leu Ser Phe Ser Phe Gly Val Thr Glu Leu Arg Pro Tyr Val Gly Thr	
115 120 125	
gtc gaa ccc gac acc att gcc gcc cgc gcc ggc ttc caa agc ggc gac	432

Val	Glu	Pro	Asp	Thr	Ile	Ala	Ala	Arg	Ala	Gly	Phe	Gln	Ser	Gly	Asp	
130						135					140					
aaa	ata	caa	tcc	gtc	aac	ggc	aca	ccc	gtt	gca	gat	tgg	ggc	agc	gcg	480
Lys	Ile	Gln	Ser	Val	Asn	Gly	Thr	Pro	Val	Ala	Asp	Trp	Gly	Ser	Ala	
145					150					155					160	
caa	acc	gaa	atc	gtc	ctc	aac	ctc	gaa	gcc	ggc	aaa	gtc	gcc	gtc	ggc	528
Gln	Thr	Glu	Ile	Val	Leu	Asn	Leu	Glu	Ala	Gly	Lys	Val	Ala	Val	Gly	
				165					170					175		
gtt	cag	acg	gca	tcg	ggc	gcg	caa	acc	gtc	cgc	acc	atc	gat	gcc	gca	576
Val	Gln	Thr	Ala	Ser	Gly	Ala	Gln	Thr	Val	Arg	Thr	Ile	Asp	Ala	Ala	
			180					185					190			
ggc	acg	ccg	gaa	gcc	ggt	aaa	atc	gca	aaa	aac	caa	ggc	tac	atc	gga	624
Gly	Thr	Pro	Glu	Ala	Gly	Lys	Ile	Ala	Lys	Asn	Gln	Gly	Tyr	Ile	Gly	
		195					200					205				
ctg	atg	ccc	ttt	aaa	atc	aca	acc	gtt	gcc	ggc	ggc	gtg	gaa	aaa	ggc	672
Leu	Met	Pro	Phe	Lys	Ile	Thr	Thr	Val	Ala	Gly	Gly	Val	Glu	Lys	Gly	
	210					215					220					
agc	ccc	gcc	gaa	aaa	gca	ggc	ctg	aaa	ccg	ggc	gac	agg	ctg	act	gcc	720
Ser	Pro	Ala	Glu	Lys	Ala	Gly	Leu	Lys	Pro	Gly	Asp	Arg	Leu	Thr	Ala	
225					230					235					240	
gcc	gac	ggc	aaa	ccc	atc	gcc	tca	tgg	caa	gaa	tgg	gca	aac	ctg	acc	768
Ala	Asp	Gly	Lys	Pro	Ile	Ala	Ser	Trp	Gln	Glu	Trp	Ala	Asn	Leu	Thr	
				245					250					255		
cgc	caa	agc	ccc	ggc	aaa	aaa	atc	acc	ctg	acc	tac	gaa	cgc	gcc	gga	816
Arg	Gln	Ser	Pro	Gly	Lys	Lys	Ile	Thr	Leu	Thr	Tyr	Glu	Arg	Ala	Gly	
			260					265					270			
caa	acc	cat	acc	gcc	gac	atc	cgc	ccc	gat	act	gtc	gaa	cag	ccc	gac	864
Gln	Thr	His	Thr	Ala	Asp	Ile	Arg	Pro	Asp	Thr	Val	Glu	Gln	Pro	Asp	
		275					280					285				
cac	acc	ctg	atc	ggg	cgc	gtc	ggc	ctc	cgt	ccg	cag	ccg	gac	agg	gcg	912
His	Thr	Leu	Ile	Gly	Arg	Val	Gly	Leu	Arg	Pro	Gln	Pro	Asp	Arg	Ala	
	290					295				300						
tgg	gac	gcg	caa	atc	cgc	cgc	agc	tac	cgt	ccg	tct	gtt	gtc	cgc	gca	960
Trp	Asp	Ala	Gln	Ile	Arg	Arg	Ser	Tyr	Arg	Pro	Ser	Val	Val	Arg	Ala	
305					310					315					320	
ttc	ggc	atg	ggc	tgg	gaa	aaa	acc	gtt	tcc	cac	tcg	tgg	aca	acc	ctc	1008

Phe Gly Met Gly Trp Glu Lys Thr Val Ser His Ser Trp Thr Thr Leu  
                                   325                                  330                                  335

aaa ttt ttc ggc aaa cta atc agc ggc aac gcc tcc gtc agc cat att 1056  
 Lys Phe Phe Gly Lys Leu Ile Ser Gly Asn Ala Ser Val Ser His Ile  
                                   340                                  345                                  350

tcc ggt ccg ctg acc att gcc gat att gcc gga cag tcc gcc gaa ctc 1104  
 Ser Gly Pro Leu Thr Ile Ala Asp Ile Ala Gly Gln Ser Ala Glu Leu  
                                   355                                  360                                  365

ggc ttg caa agt tat ttg gaa ttt ttg gca ctg gtc agc atc agc ctc 1152  
 Gly Leu Gln Ser Tyr Leu Glu Phe Leu Ala Leu Val Ser Ile Ser Leu  
                                   370                                  375                                  380

ggc gtg ctg aac ctg ctg ccc gtc ccc gtt ttg gac ggc ggc cac ctc 1200  
 Gly Val Leu Asn Leu Leu Pro Val Pro Val Leu Asp Gly Gly His Leu  
 385                                  390                                  395                                  400

gtg ttt tat act gcc gaa tgg ata cgc ggc aaa cct ttg ggc gaa cgc 1248  
 Val Phe Tyr Thr Ala Glu Trp Ile Arg Gly Lys Pro Leu Gly Glu Arg  
                                   405                                  410                                  415

gtc caa aac atc ggt ttg cgc ttc ggg ctt gcc ctc atg atg ctg atg 1296  
 Val Gln Asn Ile Gly Leu Arg Phe Gly Leu Ala Leu Met Met Leu Met  
                                   420                                  425                                  430

atg gcg gtc gcc ttc ttc aac gac gtt acc cgg ctg ctc ggt 1338  
 Met Ala Val Ala Phe Phe Asn Asp Val Thr Arg Leu Leu Gly  
                                   435                                  440                                  445

<210> 184  
 <211> 446  
 <212> PRT  
 <213> Neisseria meningitidis

<400> 184  
 Leu His Thr Leu Leu Ala Phe Ile Phe Ala Ile Leu Ile Leu Val Ser  
   1                                  5                                  10                                  15

Leu His Glu Phe Gly His Tyr Ile Val Ala Arg Leu Cys Gly Val Lys  
                                   20                                  25                                  30

Val Val Arg Phe Ser Val Gly Phe Gly Lys Pro Phe Phe Thr Arg Lys  
                                   35                                  40                                  45

Arg Gly Asp Thr Glu Trp Cys Leu Ala Pro Ile Pro Leu Gly Gly Tyr



50		55		60	
Val Lys Met Val Asp Thr Arg Glu Gly Glu Val Ser Glu Ala Asp Leu					
65		70		75	80
Pro Tyr Ala Phe Asp Lys Gln His Pro Ala Lys Arg Ile Ala Ile Val					
	85		90		95
Ala Ala Gly Pro Leu Thr Asn Leu Ala Leu Ala Val Leu Leu Tyr Gly					
	100		105		110
Leu Ser Phe Ser Phe Gly Val Thr Glu Leu Arg Pro Tyr Val Gly Thr					
	115		120		125
Val Glu Pro Asp Thr Ile Ala Ala Arg Ala Gly Phe Gln Ser Gly Asp					
	130		135		140
Lys Ile Gln Ser Val Asn Gly Thr Pro Val Ala Asp Trp Gly Ser Ala					
145		150		155	160
Gln Thr Glu Ile Val Leu Asn Leu Glu Ala Gly Lys Val Ala Val Gly					
	165		170		175
Val Gln Thr Ala Ser Gly Ala Gln Thr Val Arg Thr Ile Asp Ala Ala					
	180		185		190
Gly Thr Pro Glu Ala Gly Lys Ile Ala Lys Asn Gln Gly Tyr Ile Gly					
	195		200		205
Leu Met Pro Phe Lys Ile Thr Thr Val Ala Gly Gly Val Glu Lys Gly					
	210		215		220
Ser Pro Ala Glu Lys Ala Gly Leu Lys Pro Gly Asp Arg Leu Thr Ala					
225		230		235	240
Ala Asp Gly Lys Pro Ile Ala Ser Trp Gln Glu Trp Ala Asn Leu Thr					
	245		250		255
Arg Gln Ser Pro Gly Lys Lys Ile Thr Leu Thr Tyr Glu Arg Ala Gly					
	260		265		270
Gln Thr His Thr Ala Asp Ile Arg Pro Asp Thr Val Glu Gln Pro Asp					
	275		280		285
His Thr Leu Ile Gly Arg Val Gly Leu Arg Pro Gln Pro Asp Arg Ala					
	290		295		300
Trp Asp Ala Gln Ile Arg Arg Ser Tyr Arg Pro Ser Val Val Arg Ala					

305                      310                      315                      320  
 Phe Gly Met Gly Trp Glu Lys Thr Val Ser His Ser Trp Thr Thr Leu  
                                  325                      330                      335  
 Lys Phe Phe Gly Lys Leu Ile Ser Gly Asn Ala Ser Val Ser His Ile  
                                  340                      345                      350  
 Ser Gly Pro Leu Thr Ile Ala Asp Ile Ala Gly Gln Ser Ala Glu Leu  
                                  355                      360                      365  
 Gly Leu Gln Ser Tyr Leu Glu Phe Leu Ala Leu Val Ser Ile Ser Leu  
                                  370                      375                      380  
 Gly Val Leu Asn Leu Leu Pro Val Pro Val Leu Asp Gly Gly His Leu  
 385                                   390                      395                      400  
 Val Phe Tyr Thr Ala Glu Trp Ile Arg Gly Lys Pro Leu Gly Glu Arg  
                                  405                      410                      415  
 Val Gln Asn Ile Gly Leu Arg Phe Gly Leu Ala Leu Met Met Leu Met  
                                  420                      425                      430  
 Met Ala Val Ala Phe Phe Asn Asp Val Thr Arg Leu Leu Gly  
                                  435                      440                      445

<210> 185

<211> 1476

<212> DNA

<213> Neisseria meningitidis

<220>

<221> CDS

<222> (1)..(1476)

<400> 185

atg aaa tac aaa gac ctg cgc gac ttc atc gcc atg ctc gag cag cag    48  
 Met Lys Tyr Lys Asp Leu Arg Asp Phe Ile Ala Met Leu Glu Gln Gln  
      1                      5                      10                      15

ggc aaa ctc aaa cgc atc gcg cac ccc gtt tcc ccg cat ttg gaa atg    96  
 Gly Lys Leu Lys Arg Ile Ala His Pro Val Ser Pro His Leu Glu Met  
                                  20                      25                      30

acc gaa atc gcc gac cgc gtg ctg cgc gcc gaa ggg ccg gcg ttg ttg    144  
 Thr Glu Ile Ala Asp Arg Val Leu Arg Ala Glu Gly Pro Ala Leu Leu

35	40	45	
ttt gaa cac cca gtt aag ccc gac ggt acg cgc tat gat tat ccc gtg			192
Phe Glu His Pro Val Lys Pro Asp Gly Thr Arg Tyr Asp Tyr Pro Val			
50	55	60	
ttg gca aac ctg ttc ggc acg ccc gaa cgt gtg gcg atg ggc atg ggc			240
Leu Ala Asn Leu Phe Gly Thr Pro Glu Arg Val Ala Met Gly Met Gly			
65	70	75	80
gcg gac agc gtg tcc aag ctg cgc gaa atc ggg cag acg ctg gcg tat			288
Ala Asp Ser Val Ser Lys Leu Arg Glu Ile Gly Gln Thr Leu Ala Tyr			
	85	90	95
ttg aaa gaa ccc gaa ccg ccc aaa ggc att aaa gac gcg ttt tcc aaa			336
Leu Lys Glu Pro Glu Pro Pro Lys Gly Ile Lys Asp Ala Phe Ser Lys			
	100	105	110
ctg ccg ctc ttg aaa gac att tgg agc atg gcg ccg aac gtg gtg aaa			384
Leu Pro Leu Leu Lys Asp Ile Trp Ser Met Ala Pro Asn Val Val Lys			
	115	120	125
aat gcg ccg tgt cag gaa atc gta tgg gaa ggc gaa gac gtt gat ttg			432
Asn Ala Pro Cys Gln Glu Ile Val Trp Glu Gly Glu Asp Val Asp Leu			
130	135	140	
tat caa ctt ccg att cag cat tgc tgg ccg gaa gac gtt gcg ccg ctg			480
Tyr Gln Leu Pro Ile Gln His Cys Trp Pro Glu Asp Val Ala Pro Leu			
145	150	155	160
gta acg tgg ggc ttg acc gtc acg cgc ggg ccg cac aaa aaa cgc caa			528
Val Thr Trp Gly Leu Thr Val Thr Arg Gly Pro His Lys Lys Arg Gln			
	165	170	175
aat ctc ggc att tac cgc caa caa tta atc ggc ata aac aag ctg att			576
Asn Leu Gly Ile Tyr Arg Gln Gln Leu Ile Gly Ile Asn Lys Leu Ile			
	180	185	190
atg cgc tgg ctg tcg cat cgc ggc ggc gcg ctg gat tat cag gaa ttc			624
Met Arg Trp Leu Ser His Arg Gly Gly Ala Leu Asp Tyr Gln Glu Phe			
195	200	205	
cgc aaa ctc aat ccc gat acg ccg tat ccc gtc gcc gtc gtg ctc ggc			672
Arg Lys Leu Asn Pro Asp Thr Pro Tyr Pro Val Ala Val Val Leu Gly			
210	215	220	
tgc gac cct gcc acc att ttg ggc gcg gta acg ccc gtt ccc gat acc			720
Cys Asp Pro Ala Thr Ile Leu Gly Ala Val Thr Pro Val Pro Asp Thr			

225	230	235	240	
ttg agc gaa tac cag ttt gcc gga ctg ctg cgc ggt tcg cgg acg gaa	768			
Ieu Ser Glu Tyr Gln Phe Ala Gly Leu Leu Arg Gly Ser Arg Thr Glu				
245	250	255		
ctg gtg aaa tgt atc ggc aac gat ttg caa gtg cct gcc cgc gca gaa	816			
Leu Val Lys Cys Ile Gly Asn Asp Leu Gln Val Pro Ala Arg Ala Glu				
260	265	270		
atc gtg ttg gaa ggc gtc atc cat cca aac gaa acc gcg ttg gaa ggt	864			
Ile Val Leu Glu Gly Val Ile His Pro Asn Glu Thr Ala Leu Glu Gly				
275	280	285		
cca tac ggc gac cac acg ggc tat tac aac gag cag gac cat ttc ccc	912			
Pro Tyr Gly Asp His Thr Gly Tyr Tyr Asn Glu Gln Asp His Phe Pro				
290	295	300		
gtg ttt acg gtc gaa cgc atc acc atg cgc gaa aac ccg att tac cac	960			
Val Phe Thr Val Glu Arg Ile Thr Met Arg Glu Asn Pro Ile Tyr His				
305	310	315	320	
tct acc tac aca ggc aaa ccg ccc gat gaa ccc gcc gtt ttg ggc gtg	1008			
Ser Thr Tyr Thr Gly Lys Pro Pro Asp Glu Pro Ala Val Leu Gly Val				
325	330	335		
gcg ttg aac gaa gtg ttc gta ccg ctt ttg caa aag cag ttc ccc gaa	1056			
Ala Leu Asn Glu Val Phe Val Pro Leu Leu Gln Lys Gln Phe Pro Glu				
340	345	350		
atc acc gat ttt tac ctg ccg ccc gaa ggc tgc tcc tac cgc atg gcg	1104			
Ile Thr Asp Phe Tyr Leu Pro Pro Glu Gly Cys Ser Tyr Arg Met Ala				
355	360	365		
gtg gtg agc atg aaa aaa cag tac gcc gga cac gcc aag cgc gtg atg	1152			
Val Val Ser Met Lys Lys Gln Tyr Ala Gly His Ala Lys Arg Val Met				
370	375	380		
atg ggc tgc tgg tcg ttc ctg cgc cag ttt atg tac acc aaa ttc atc	1200			
Met Gly Cys Trp Ser Phe Leu Arg Gln Phe Met Tyr Thr Lys Phe Ile				
385	390	395	400	
att gtg gtg gat gac gat gtg gat gtg cgc gac tgg aaa gaa gtc atc	1248			
Ile Val Val Asp Asp Asp Val Asp Val Arg Asp Trp Lys Glu Val Ile				
405	410	415		
tgg gcg gta acc acg cgc atg gac ccc gtg cgc gat acc gtt ttg atg	1296			
Trp Ala Val Thr Thr Arg Met Asp Pro Val Arg Asp Thr Val Leu Met				

420	425	430	
gaa aac acg ccc atc gac tac ctc gac ttc gcc agc ccc gtc agc gga			1344
Glu Asn Thr Pro Ile Asp Tyr Leu Asp Phe Ala Ser Pro Val Ser Gly			
435	440	445	
ctt ggc ggc aaa atg ggt ttg gat gcg acc aac aag tgg ccg ggc gaa			1392
Leu Gly Gly Lys Met Gly Leu Asp Ala Thr Asn Lys Trp Pro Gly Glu			
450	455	460	
acc gac cgc gaa tgg gga cgg gtg att aaa aaa gac cct gcg gtt acg			1440
Thr Asp Arg Glu Trp Gly Arg Val Ile Lys Lys Asp Pro Ala Val Thr			
465	470	475	480
gct aag att gat gag att tgg gag gaa ttg ggg ttg			1476
Ala Lys Ile Asp Glu Ile Trp Glu Glu Leu Gly Leu			
485	490		

&lt;210&gt; 186

&lt;211&gt; 492

&lt;212&gt; PRT

&lt;213&gt; Neisseria meningitidis

&lt;400&gt; 186

Met	Lys	Tyr	Lys	Asp	Leu	Arg	Asp	Phe	Ile	Ala	Met	Leu	Glu	Gln	Gln
1				5					10					15	
Gly Lys Leu Lys Arg Ile Ala His Pro Val Ser Pro His Leu Glu Met															
				20					25					30	
Thr Glu Ile Ala Asp Arg Val Leu Arg Ala Glu Gly Pro Ala Leu Leu															
				35					40					45	
Phe Glu His Pro Val Lys Pro Asp Gly Thr Arg Tyr Asp Tyr Pro Val															
				50					55					60	
Leu Ala Asn Leu Phe Gly Thr Pro Glu Arg Val Ala Met Gly Met Gly															
				65					70					75	80
Ala Asp Ser Val Ser Lys Leu Arg Glu Ile Gly Gln Thr Leu Ala Tyr															
				85					90					95	
Leu Lys Glu Pro Glu Pro Pro Lys Gly Ile Lys Asp Ala Phe Ser Lys															
				100					105					110	
Leu Pro Leu Leu Lys Asp Ile Trp Ser Met Ala Pro Asn Val Val Lys															
				115					120					125	

Asn	Ala	Pro	Cys	Gln	Glu	Ile	Val	Trp	Glu	Gly	Glu	Asp	Val	Asp	Leu	130	135	140	
Tyr	Gln	Leu	Pro	Ile	Gln	His	Cys	Trp	Pro	Glu	Asp	Val	Ala	Pro	Leu	145	150	155	160
Val	Thr	Trp	Gly	Leu	Thr	Val	Thr	Arg	Gly	Pro	His	Lys	Lys	Arg	Gln	165	170	175	
Asn	Leu	Gly	Ile	Tyr	Arg	Gln	Gln	Leu	Ile	Gly	Ile	Asn	Lys	Leu	Ile	180	185	190	
Met	Arg	Trp	Leu	Ser	His	Arg	Gly	Gly	Ala	Leu	Asp	Tyr	Gln	Glu	Phe	195	200	205	
Arg	Lys	Leu	Asn	Pro	Asp	Thr	Pro	Tyr	Pro	Val	Ala	Val	Val	Leu	Gly	210	215	220	
Cys	Asp	Pro	Ala	Thr	Ile	Leu	Gly	Ala	Val	Thr	Pro	Val	Pro	Asp	Thr	225	230	235	240
Leu	Ser	Glu	Tyr	Gln	Phe	Ala	Gly	Leu	Leu	Arg	Gly	Ser	Arg	Thr	Glu	245	250	255	
Leu	Val	Lys	Cys	Ile	Gly	Asn	Asp	Leu	Gln	Val	Pro	Ala	Arg	Ala	Glu	260	265	270	
Ile	Val	Leu	Glu	Gly	Val	Ile	His	Pro	Asn	Glu	Thr	Ala	Leu	Glu	Gly	275	280	285	
Pro	Tyr	Gly	Asp	His	Thr	Gly	Tyr	Tyr	Asn	Glu	Gln	Asp	His	Phe	Pro	290	295	300	
Val	Phe	Thr	Val	Glu	Arg	Ile	Thr	Met	Arg	Glu	Asn	Pro	Ile	Tyr	His	305	310	315	320
Ser	Thr	Tyr	Thr	Gly	Lys	Pro	Pro	Asp	Glu	Pro	Ala	Val	Leu	Gly	Val	325	330	335	
Ala	Leu	Asn	Glu	Val	Phe	Val	Pro	Leu	Leu	Gln	Lys	Gln	Phe	Pro	Glu	340	345	350	
Ile	Thr	Asp	Phe	Tyr	Leu	Pro	Pro	Glu	Gly	Cys	Ser	Tyr	Arg	Met	Ala	355	360	365	
Val	Val	Ser	Met	Lys	Lys	Gln	Tyr	Ala	Gly	His	Ala	Lys	Arg	Val	Met	370	375	380	

Met Gly Cys Trp Ser Phe Leu Arg Gln Phe Met Tyr Thr Lys Phe Ile  
 385 390 395 400

Ile Val Val Asp Asp Asp Val Asp Val Arg Asp Trp Lys Glu Val Ile  
 405 410 415

Trp Ala Val Thr Thr Arg Met Asp Pro Val Arg Asp Thr Val Leu Met  
 420 425 430

Glu Asn Thr Pro Ile Asp Tyr Leu Asp Phe Ala Ser Pro Val Ser Gly  
 435 440 445

Leu Gly Gly Lys Met Gly Leu Asp Ala Thr Asn Lys Trp Pro Gly Glu  
 450 455 460

Thr Asp Arg Glu Trp Gly Arg Val Ile Lys Lys Asp Pro Ala Val Thr  
 465 470 475 480

Ala Lys Ile Asp Glu Ile Trp Glu Glu Leu Gly Leu  
 485 490

<210> 187

<211> 1191

<212> DNA

<213> Neisseria meningitidis

<220>

<221> CDS

<222> (1)..(1191)

<400> 187

atg ttc ttc aag cac atc gaa gcc gcc ccc gcc gat ccg att ctc ggt 48  
 Met Phe Phe Lys His Ile Glu Ala Ala Pro Ala Asp Pro Ile Leu Gly  
 1 5 10 15

ttg ggc gaa gca ttc aaa gcc gaa acc cgc ccc gaa aaa gtc aac ctc 96  
 Leu Gly Glu Ala Phe Lys Ala Glu Thr Arg Pro Glu Lys Val Asn Leu  
 20 25 30

ggc atc ggc gtg tac aaa gac gca tcc ggc gcg aca cct att gtc aaa 144  
 Gly Ile Gly Val Tyr Lys Asp Ala Ser Gly Ala Thr Pro Ile Val Lys  
 35 40 45

gcc gtc aaa gaa gcc gaa aaa cgc ctg ttg gaa agc gaa aca act aaa 192  
 Ala Val Lys Glu Ala Glu Lys Arg Leu Leu Glu Ser Glu Thr Thr Lys

50	55	60	
aac tac ctc acc atc gac ggc gtt gcc gac tac aac gag caa acc caa			240
Asn Tyr Leu Thr Ile Asp Gly Val Ala Asp Tyr Asn Glu Gln Thr Gln			
65	70	75	80
att ctg ctg ttc ggc aaa gac cac gaa atc atc gcc agc cgt cgc gcc			288
Ile Leu Leu Phe Gly Lys Asp His Glu Ile Ile Ala Ser Arg Arg Ala			
	85	90	95
aaa aca gcg caa agc ctt ggc ggt aca ggc gca ttg cgt att gcg gcc			336
Lys Thr Ala Gln Ser Leu Gly Gly Thr Gly Ala Leu Arg Ile Ala Ala			
	100	105	110
gag ttt gcc aaa cgt cag ttg aac gcg caa acc atc tgg att tcc aat			384
Glu Phe Ala Lys Arg Gln Leu Asn Ala Gln Thr Ile Trp Ile Ser Asn			
	115	120	125
ccg act tgg ccc aac cac aac gcc atc gcc aaa gcg gtc ggt atc caa			432
Pro Thr Trp Pro Asn His Asn Ala Ile Ala Lys Ala Val Gly Ile Gln			
	130	135	140
gac caa cct tat cgc tac tat gat gcc gcc aaa cac ggt ttg gat tgg			480
Asp Gln Pro Tyr Arg Tyr Tyr Asp Ala Ala Lys His Gly Leu Asp Trp			
145	150	155	160
gac ggt atg att gaa gac ttg agc caa gcg caa aaa ggc gac atc gtc			528
Asp Gly Met Ile Glu Asp Leu Ser Gln Ala Gln Lys Gly Asp Ile Val			
	165	170	175
ctg ctg cac ggc tgc tgc cac aac cct acc ggt atc gac cct acg ccc			576
Leu Leu His Gly Cys Cys His Asn Pro Thr Gly Ile Asp Pro Thr Pro			
	180	185	190
gaa caa tgg gaa act ctg gca aaa ctt tct gcc gaa aaa ggc tgg tta			624
Glu Gln Trp Glu Thr Leu Ala Lys Leu Ser Ala Glu Lys Gly Trp Leu			
	195	200	205
ccg ctg ttt gac ttt gcc tac caa ggc ttc ggc aat ggt ttg gaa gaa			672
Pro Leu Phe Asp Phe Ala Tyr Gln Gly Phe Gly Asn Gly Leu Glu Glu			
	210	215	220
gat gcc tac ggc ctg cgc gtg ttc ttg aaa cac aat aca gaa ttg ctg			720
Asp Ala Tyr Gly Leu Arg Val Phe Leu Lys His Asn Thr Glu Leu Leu			
225	230	235	240
att gcc agc tct tat tcc aaa aac ttc ggt atg tac aac gag cgc gtc			768
Ile Ala Ser Ser Tyr Ser Lys Asn Phe Gly Met Tyr Asn Glu Arg Val			



	245	250	255	
ggc gcg ttc act ttg gtg gcc gaa gat gaa gca acc gcc gcc cgc gcc				816
Gly Ala Phe Thr Leu Val Ala Glu Asp Glu Ala Thr Ala Ala Arg Ala				
	260	265	270	
cac agc caa gtc aaa acc att atc cgt acc ttg tat tcc aac cct gct				864
His Ser Gln Val Lys Thr Ile Ile Arg Thr Leu Tyr Ser Asn Pro Ala				
	275	280	285	
tca cac ggc gcg aac act att gcg ctg gtg ttg aaa aat gat gat ttg				912
Ser His Gly Ala Asn Thr Ile Ala Leu Val Leu Lys Asn Asp Asp Leu				
	290	295	300	
aaa gca caa tgg att gcc gaa ctc gat gaa atg cgc gcc cgt atc aaa				960
Lys Ala Gln Trp Ile Ala Glu Leu Asp Glu Met Arg Gly Arg Ile Lys				
305	310	315	320	
gcc atg cgc caa aaa ttt gtc gag ttg ctc aaa gcc aaa ggt gca act				1008
Ala Met Arg Gln Lys Phe Val Glu Leu Leu Lys Ala Lys Gly Ala Thr				
	325	330	335	
caa gac ttt gat ttc att atc gaa caa aac gcc atg ttc tcc ttc agc				1056
Gln Asp Phe Asp Phe Ile Ile Glu Gln Asn Gly Met Phe Ser Phe Ser				
	340	345	350	
ggc ttg act ccc gaa caa gtc gac cgt tta aaa aac gag ttt gcc att				1104
Gly Leu Thr Pro Glu Gln Val Asp Arg Leu Lys Asn Glu Phe Ala Ile				
	355	360	365	
tat gcc gtc cgc tcc gcc cgc atc aac gtc gcc gcc att acc gac gac				1152
Tyr Ala Val Arg Ser Gly Arg Ile Asn Val Ala Gly Ile Thr Asp Asp				
	370	375	380	
aac atc gat tat ctg tgc gaa agt atc gta aaa gta ctg				1191
Asn Ile Asp Tyr Leu Cys Glu Ser Ile Val Lys Val Leu				
385	390	395		

&lt;210&gt; 188

&lt;211&gt; 397

&lt;212&gt; PRT

&lt;213&gt; Neisseria meningitidis

&lt;400&gt; 188

Met Phe Phe Lys His Ile Glu Ala Ala Pro Ala Asp Pro Ile Leu Gly

1

5

10

15

Leu Gly Glu Ala Phe Lys Ala Glu Thr Arg Pro Glu Lys Val Asn Leu  
                   20                                  25                                  30

Gly Ile Gly Val Tyr Lys Asp Ala Ser Gly Ala Thr Pro Ile Val Lys  
                   35                                  40                                  45

Ala Val Lys Glu Ala Glu Lys Arg Leu Leu Glu Ser Glu Thr Thr Lys  
                   50                                  55                                  60

Asn Tyr Leu Thr Ile Asp Gly Val Ala Asp Tyr Asn Glu Gln Thr Gln  
                   65                                  70                                  75                                  80

Ile Leu Leu Phe Gly Lys Asp His Glu Ile Ile Ala Ser Arg Arg Ala  
                                   85                                  90                                  95

Lys Thr Ala Gln Ser Leu Gly Gly Thr Gly Ala Leu Arg Ile Ala Ala  
                                  100                                 105                                 110

Glu Phe Ala Lys Arg Gln Leu Asn Ala Gln Thr Ile Trp Ile Ser Asn  
                   115                                 120                                 125

Pro Thr Trp Pro Asn His Asn Ala Ile Ala Lys Ala Val Gly Ile Gln  
                   130                                 135                                 140

Asp Gln Pro Tyr Arg Tyr Tyr Asp Ala Ala Lys His Gly Leu Asp Trp  
                   145                                 150                                 155                                 160

Asp Gly Met Ile Glu Asp Leu Ser Gln Ala Gln Lys Gly Asp Ile Val  
                                  165                                 170                                 175

Leu Leu His Gly Cys Cys His Asn Pro Thr Gly Ile Asp Pro Thr Pro  
                                  180                                 185                                 190

Glu Gln Trp Glu Thr Leu Ala Lys Leu Ser Ala Glu Lys Gly Trp Leu  
                   195                                 200                                 205

Pro Leu Phe Asp Phe Ala Tyr Gln Gly Phe Gly Asn Gly Leu Glu Glu  
                   210                                 215                                 220

Asp Ala Tyr Gly Leu Arg Val Phe Leu Lys His Asn Thr Glu Leu Leu  
                   225                                 230                                 235                                 240

Ile Ala Ser Ser Tyr Ser Lys Asn Phe Gly Met Tyr Asn Glu Arg Val  
                                  245                                 250                                 255

Gly Ala Phe Thr Leu Val Ala Glu Asp Glu Ala Thr Ala Ala Arg Ala  
                   260                                 265                                 270

His Ser Gln Val Lys Thr Ile Ile Arg Thr Leu Tyr Ser Asn Pro Ala  
 275 280 285

Ser His Gly Ala Asn Thr Ile Ala Leu Val Leu Lys Asn Asp Asp Leu  
 290 295 300

Lys Ala Gln Trp Ile Ala Glu Leu Asp Glu Met Arg Gly Arg Ile Lys  
 305 310 315 320

Ala Met Arg Gln Lys Phe Val Glu Leu Leu Lys Ala Lys Gly Ala Thr  
 325 330 335

Gln Asp Phe Asp Phe Ile Ile Glu Gln Asn Gly Met Phe Ser Phe Ser  
 340 345 350

Gly Leu Thr Pro Glu Gln Val Asp Arg Leu Lys Asn Glu Phe Ala Ile  
 355 360 365

Tyr Ala Val Arg Ser Gly Arg Ile Asn Val Ala Gly Ile Thr Asp Asp  
 370 375 380

Asn Ile Asp Tyr Leu Cys Glu Ser Ile Val Lys Val Leu  
 385 390 395

<210> 189

<211> 462

<212> DNA

<213> Neisseria meningitidis

<220>

<221> CDS

<222> (1)..(462)

<400> 189

ttg ctt tgc ccg gaa aaa atg tcg ggg atg gcg gga cag tat ccg tac 48  
 Leu Leu Cys Pro Glu Lys Met Ser Gly Met Ala Gly Gln Tyr Pro Tyr  
 1 5 10 15

ggc gtc cgg tcg ggt ttg cgg agg aac ggc ttg aaa ctt tgg gat att 96  
 Gly Val Arg Ser Gly Leu Arg Arg Asn Gly Leu Lys Leu Trp Asp Ile  
 20 25 30

cat ttt aga atg acc cgt ttt atc gtc gca aga tgc ggt tta ttg ttt 144  
 His Phe Arg Met Thr Arg Phe Ile Val Ala Arg Cys Gly Leu Leu Phe  
 35 40 45

gca acc ctt aaa gga aaa acc atg aag aaa atg ttc gtg ctg ttc tgt 192  
 Ala Thr Leu Lys Gly Lys Thr Met Lys Lys Met Phe Val Leu Phe Cys  
           50                              55                              60

atg ctg ttc tcc tgc gcc ttc tcc ctt gcg gcg gta aac atc aat gcg 240  
 Met Leu Phe Ser Cys Ala Phe Ser Leu Ala Ala Val Asn Ile Asn Ala  
           65                              70                              75                              80

gct tcg cag cag gag ctg gag gcg ctg ccg ggc ata ggc cct gcg aag 288  
 Ala Ser Gln Gln Glu Leu Glu Ala Leu Pro Gly Ile Gly Pro Ala Lys  
   85                              90                              95

gcg aag gcc att gcg gaa tac cgt gcg caa aac ggt gcg ttc aag tct 336  
 Ala Lys Ala Ile Ala Glu Tyr Arg Ala Gln Asn Gly Ala Phe Lys Ser  
                               100                              105                              110

gta gac gat ttg acc aag gta aag ggc atc ggc cct gcg gtg ctg gcg 384  
 Val Asp Asp Leu Thr Lys Val Lys Gly Ile Gly Pro Ala Val Leu Ala  
                               115                              120                              125

aag ctg aag gat cag gct tct gtc ggt gcg ccc gca cca aaa ggc ccg 432  
 Lys Leu Lys Asp Gln Ala Ser Val Gly Ala Pro Ala Pro Lys Gly Pro  
           130                              135                              140

gca aaa ccg gct ctg ccc gca gct aaa aaa 462  
 Ala Lys Pro Ala Leu Pro Ala Ala Lys Lys  
           145                              150

<210> 190

<211> 154

<212> PRT

<213> Neisseria meningitidis

<400> 190

Leu Leu Cys Pro Glu Lys Met Ser Gly Met Ala Gly Gln Tyr Pro Tyr  
           1                              5                              10                              15

Gly Val Arg Ser Gly Leu Arg Arg Asn Gly Leu Lys Leu Trp Asp Ile  
                               20                              25                              30

His Phe Arg Met Thr Arg Phe Ile Val Ala Arg Cys Gly Leu Leu Phe  
           35                              40                              45

Ala Thr Leu Lys Gly Lys Thr Met Lys Lys Met Phe Val Leu Phe Cys  
           50                              55                              60

Met Leu Phe Ser Cys Ala Phe Ser Leu Ala Ala Val Asn Ile Asn Ala

65		70		75		80
Ala Ser Gln Gln Glu Leu Glu Ala Leu Pro Gly Ile Gly Pro Ala Lys						
	85		90		95	
Ala Lys Ala Ile Ala Glu Tyr Arg Ala Gln Asn Gly Ala Phe Lys Ser						
	100		105		110	
Val Asp Asp Leu Thr Lys Val Lys Gly Ile Gly Pro Ala Val Leu Ala						
	115		120		125	
Lys Leu Lys Asp Gln Ala Ser Val Gly Ala Pro Ala Pro Lys Gly Pro						
	130		135		140	
Ala Lys Pro Ala Leu Pro Ala Ala Lys Lys						
145		150				

&lt;210&gt; 191

&lt;211&gt; 684

&lt;212&gt; DNA

&lt;213&gt; Neisseria meningitidis

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(684)

&lt;400&gt; 191

atg ttt gct ttt tta gaa gcc ttt ttt gtc gaa tac ggt tat gcg gct	48
Met Phe Ala Phe Leu Glu Ala Phe Phe Val Glu Tyr Gly Tyr Ala Ala	
1 5 10 15	
ggt ttt ttt gta ttg gtc atc tgc ggt ttc ggc gtg ccg att ccc gag	96
Val Phe Phe Val Leu Val Ile Cys Gly Phe Gly Val Pro Ile Pro Glu	
20 25 30	
gat ttg acc ttg gta aca ggc ggc gtg att tcg ggt atg ggt tat acc	144
Asp Leu Thr Leu Val Thr Gly Gly Val Ile Ser Gly Met Gly Tyr Thr	
35 40 45	
aat ccg cat att atg ttt gca gtc ggt atg ctc ggc gta ttg gtc ggg	192
Asn Pro His Ile Met Phe Ala Val Gly Met Leu Gly Val Leu Val Gly	
50 55 60	
gac ggc atc atg ttc gcc gcc gga cga att tgg ggg cag aaa atc cta	240
Asp Gly Ile Met Phe Ala Ala Gly Arg Ile Trp Gly Gln Lys Ile Leu	
65 70 75 80	

agg ttc aaa cct att gcg cgc atc atg acg ccg aaa cgt tat gag cag 288  
 Arg Phe Lys Pro Ile Ala Arg Ile Met Thr Pro Lys Arg Tyr Glu Gln  
                     85                                    90                                    95

gtt cag gaa aaa ttc gac aaa tac ggt aac tgg gtc tta ttt gtc gcc 336  
 Val Gln Glu Lys Phe Asp Lys Tyr Gly Asn Trp Val Leu Phe Val Ala  
                     100                                    105                                    110

cgt ttc ctg ccc ggt ttg aga acg gcc gta ttt gtt aca gcc ggt atc 384  
 Arg Phe Leu Pro Gly Leu Arg Thr Ala Val Phe Val Thr Ala Gly Ile  
                     115                                    120                                    125

agc cgc aag gtt tca tac ttg cgt ttt atc att atg gat gga ctg gcc 432  
 Ser Arg Lys Val Ser Tyr Leu Arg Phe Ile Ile Met Asp Gly Leu Ala  
                     130                                    135                                    140

gca ctg att tcc gtc cct att tgg att tat ctg ggc gaa tac ggt gcg 480  
 Ala Leu Ile Ser Val Pro Ile Trp Ile Tyr Leu Gly Glu Tyr Gly Ala  
                     145                                    150                                    155                                    160

cac aac atc gat tgg ctg atg gcg aaa atg cac agc ctg caa tcg ggt 528  
 His Asn Ile Asp Trp Leu Met Ala Lys Met His Ser Leu Gln Ser Gly  
                     165                                    170                                    175

att ttt gtt atc ttg ggt ata ggt gcg acc gtt gtc gct tgg att tgg 576  
 Ile Phe Val Ile Leu Gly Ile Gly Ala Thr Val Val Ala Trp Ile Trp  
                     180                                    185                                    190

tgg aaa aaa cgc caa cgt atc cag ttt tac cgc agc aaa ttg aaa gaa 624  
 Trp Lys Lys Arg Gln Arg Ile Gln Phe Tyr Arg Ser Lys Leu Lys Glu  
                     195                                    200                                    205

aag cgg gcg caa cgc aaa gcc gcc aag gca gcc aaa aaa gcc gcg caa 672  
 Lys Arg Ala Gln Arg Lys Ala Ala Lys Ala Ala Lys Lys Ala Ala Gln  
                     210                                    215                                    220

agc aaa caa taa 684  
 Ser Lys Gln  
 225

<210> 192

<211> 227

<212> PRT

<213> Neisseria meningitidis

<400> 192

Met Phe Ala Phe Leu Glu Ala Phe Phe Val Glu Tyr Gly Tyr Ala Ala  
 1 5 10 15  
 Val Phe Phe Val Leu Val Ile Cys Gly Phe Gly Val Pro Ile Pro Glu  
 20 25 30  
 Asp Leu Thr Leu Val Thr Gly Gly Val Ile Ser Gly Met Gly Tyr Thr  
 35 40 45  
 Asn Pro His Ile Met Phe Ala Val Gly Met Leu Gly Val Leu Val Gly  
 50 55 60  
 Asp Gly Ile Met Phe Ala Ala Gly Arg Ile Trp Gly Gln Lys Ile Leu  
 65 70 75 80  
 Arg Phe Lys Pro Ile Ala Arg Ile Met Thr Pro Lys Arg Tyr Glu Gln  
 85 90 95  
 Val Gln Glu Lys Phe Asp Lys Tyr Gly Asn Trp Val Leu Phe Val Ala  
 100 105 110  
 Arg Phe Leu Pro Gly Leu Arg Thr Ala Val Phe Val Thr Ala Gly Ile  
 115 120 125  
 Ser Arg Lys Val Ser Tyr Leu Arg Phe Ile Ile Met Asp Gly Leu Ala  
 130 135 140  
 Ala Leu Ile Ser Val Pro Ile Trp Ile Tyr Leu Gly Glu Tyr Gly Ala  
 145 150 155 160  
 His Asn Ile Asp Trp Leu Met Ala Lys Met His Ser Leu Gln Ser Gly  
 165 170 175  
 Ile Phe Val Ile Leu Gly Ile Gly Ala Thr Val Val Ala Trp Ile Trp  
 180 185 190  
 Trp Lys Lys Arg Gln Arg Ile Gln Phe Tyr Arg Ser Lys Leu Lys Glu  
 195 200 205  
 Lys Arg Ala Gln Arg Lys Ala Ala Lys Ala Ala Lys Lys Ala Ala Gln  
 210 215 220  
 Ser Lys Gln  
 225

&lt;210&gt; 193

&lt;211&gt; 1089

&lt;212&gt; DNA

<213> *Neisseria meningitidis*

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(1089)

&lt;400&gt; 193

atg	aat	gac	tac	acg	cag	cag	ctt	caa	ggg	aaa	aaa	gac	tac	ctt	aaa	48
Met	Asn	Asp	Tyr	Thr	Gln	Gln	Leu	Gln	Gly	Lys	Lys	Asp	Tyr	Leu	Lys	
1				5					10					15		

acc	ctt	ttt	gca	ggg	ttg	gat	gtt	cct	gag	tgg	gaa	gtg	tac	gaa	tct	96
Thr	Leu	Phe	Ala	Gly	Leu	Asp	Val	Pro	Glu	Trp	Glu	Val	Tyr	Glu	Ser	
			20				25						30			

ccg	gac	aaa	cat	tac	cgt	atg	cgt	gcc	gag	ttc	cgt	att	tgg	cac	gaa	144
Pro	Asp	Lys	His	Tyr	Arg	Met	Arg	Ala	Glu	Phe	Arg	Ile	Trp	His	Glu	
		35					40					45				

ggc	ggg	gaa	atg	ttt	tat	gcc	atg	ttt	gaa	aaa	ggg	cag	aaa	gcc	agc	192
Gly	Gly	Glu	Met	Phe	Tyr	Ala	Met	Phe	Glu	Lys	Gly	Gln	Lys	Ala	Ser	
	50					55					60					

ggc	gca	agc	atg	ata	cgc	tgc	gac	cgt	ttt	gaa	gca	gct	tcc	gag	gct	240
Gly	Ala	Ser	Met	Ile	Arg	Cys	Asp	Arg	Phe	Glu	Ala	Ala	Ser	Glu	Ala	
	65				70					75				80		

gtc	aac	cgc	ctc	atg	ccc	gag	ctg	atc	gcc	gcc	gcc	gcg	caa	tcc	ccc	288
Val	Asn	Arg	Leu	Met	Pro	Glu	Leu	Ile	Ala	Ala	Ala	Ala	Gln	Ser	Pro	
			85					90						95		

gaa	ctc	aaa	aaa	cgc	tgg	tat	gcc	gtc	gaa	ttt	ctg	tcc	acg	ctc	agc	336
Glu	Leu	Lys	Lys	Arg	Trp	Tyr	Ala	Val	Glu	Phe	Leu	Ser	Thr	Leu	Ser	
		100					105					110				

ggg	gaa	atg	ctg	gtt	acc	atg	att	tac	cac	aaa	agg	ctt	gat	gct	gag	384
Gly	Glu	Met	Leu	Val	Thr	Met	Ile	Tyr	His	Lys	Arg	Leu	Asp	Ala	Glu	
		115					120					125				

tgg	atg	cag	gcg	gcg	caa	gcg	tta	cag	caa	cag	ttg	gat	att	tcc	gtt	432
Trp	Met	Gln	Ala	Ala	Gln	Ala	Leu	Gln	Gln	Gln	Leu	Asp	Ile	Ser	Val	
	130				135						140					

att	ggg	cgg	agc	agg	gga	cag	aaa	ata	gtc	tta	aaa	cag	gac	tat	gta	480
Ile	Gly	Arg	Ser	Arg	Gly	Gln	Lys	Ile	Val	Leu	Lys	Gln	Asp	Tyr	Val	
145					150					155					160	



acg gaa act ttg aag gtc ggc aac cgg gat ttc cgt tat cgg caa att	528
Thr Glu Thr Leu Lys Val Gly Asn Arg Asp Phe Arg Tyr Arg Gln Ile	
165 170 175	
 gaa ggc agt ttt acc caa ccg aat gcc gcc gtg tgt cag aaa atg ctt	576
Glu Gly Ser Phe Thr Gln Pro Asn Ala Ala Val Cys Gln Lys Met Leu	
180 185 190	
 gaa tgg gcg tgc cgc acg gcg gaa ggc ttg ggc agc gac ctg ctc gaa	624
Glu Trp Ala Cys Arg Thr Ala Glu Gly Leu Gly Ser Asp Leu Leu Glu	
195 200 205	
 ctg tat tgc gga aac ggc aat ttc acc ctg ccg ctg tcc cga tat ttc	672
Leu Tyr Cys Gly Asn Gly Asn Phe Thr Leu Pro Leu Ser Arg Tyr Phe	
210 215 220	
 cga cag gtt ttg gca acc gaa atc tcc aaa acc tcc gtc agc gcg gcg	720
Arg Gln Val Leu Ala Thr Glu Ile Ser Lys Thr Ser Val Ser Ala Ala	
225 230 235 240	
 caa tgg aat atc gaa gcc aac cgc atc ggc aac atc aaa atc gcc cgt	768
Gln Trp Asn Ile Glu Ala Asn Arg Ile Gly Asn Ile Lys Ile Ala Arg	
245 250 255	
 ctg tct gct gaa gaa ttt acc gaa gcc tat acc gga aaa cgt gag ttt	816
Leu Ser Ala Glu Glu Phe Thr Glu Ala Tyr Thr Gly Lys Arg Glu Phe	
260 265 270	
 aaa cgc ctt aag gat ggc ggt att gct ttg acg gat tac gca ttt tcc	864
Lys Arg Leu Lys Asp Gly Gly Ile Ala Leu Thr Asp Tyr Ala Phe Ser	
275 280 285	
 act att ttc gtc gat ccg ccg cgt gcc ggt atc gat gag gaa act ttg	912
Thr Ile Phe Val Asp Pro Pro Arg Ala Gly Ile Asp Glu Glu Thr Leu	
290 295 300	
 aag ctg gtg tcg cag ttt gac aac atc atc tac att tcc tgc aat ccc	960
Lys Leu Val Ser Gln Phe Asp Asn Ile Ile Tyr Ile Ser Cys Asn Pro	
305 310 315 320	
 gaa acg ttg cgc gcc aat ttg gac acc ttg gcg gaa acc cat gcg gtc	1008
Glu Thr Leu Arg Ala Asn Leu Asp Thr Leu Ala Glu Thr His Ala Val	
325 330 335	
 gaa cgt gcc gcc ctg ttc gac caa ttc ccg ttt acg cac cat atc gaa	1056
Glu Arg Ala Ala Leu Phe Asp Gln Phe Pro Phe Thr His His Ile Glu	
340 345 350	

agt ggt gta ttg ttg aaa aag aaa atc ctt tga  
 Ser Gly Val Leu Leu Lys Lys Lys Ile Leu  
           355                          360

1089

&lt;210&gt; 194

&lt;211&gt; 362

&lt;212&gt; PRT

&lt;213&gt; Neisseria meningitidis

&lt;400&gt; 194

Met Asn Asp Tyr Thr Gln Gln Leu Gln Gly Lys Lys Asp Tyr Leu Lys  
       1                          5                          10                          15

Thr Leu Phe Ala Gly Leu Asp Val Pro Glu Trp Glu Val Tyr Glu Ser  
                           20                          25                          30

Pro Asp Lys His Tyr Arg Met Arg Ala Glu Phe Arg Ile Trp His Glu  
                           35                          40                          45

Gly Gly Glu Met Phe Tyr Ala Met Phe Glu Lys Gly Gln Lys Ala Ser  
           50                          55                          60

Gly Ala Ser Met Ile Arg Cys Asp Arg Phe Glu Ala Ala Ser Glu Ala  
       65                          70                          75                          80

Val Asn Arg Leu Met Pro Glu Leu Ile Ala Ala Ala Ala Gln Ser Pro  
                           85                          90                          95

Glu Leu Lys Lys Arg Trp Tyr Ala Val Glu Phe Leu Ser Thr Leu Ser  
                           100                          105                          110

Gly Glu Met Leu Val Thr Met Ile Tyr His Lys Arg Leu Asp Ala Glu  
           115                          120                          125

Trp Met Gln Ala Ala Gln Ala Leu Gln Gln Gln Leu Asp Ile Ser Val  
       130                          135                          140

Ile Gly Arg Ser Arg Gly Gln Lys Ile Val Leu Lys Gln Asp Tyr Val  
       145                          150                          155                          160

Thr Glu Thr Leu Lys Val Gly Asn Arg Asp Phe Arg Tyr Arg Gln Ile  
                           165                          170                          175

Glu Gly Ser Phe Thr Gln Pro Asn Ala Ala Val Cys Gln Lys Met Leu  
                           180                          185                          190

Glu Trp Ala Cys Arg Thr Ala Glu Gly Leu Gly Ser Asp Leu Leu Glu  
 195 200 205

Leu Tyr Cys Gly Asn Gly Asn Phe Thr Leu Pro Leu Ser Arg Tyr Phe  
 210 215 220

Arg Gln Val Leu Ala Thr Glu Ile Ser Lys Thr Ser Val Ser Ala Ala  
 225 230 235 240

Gln Trp Asn Ile Glu Ala Asn Arg Ile Gly Asn Ile Lys Ile Ala Arg  
 245 250 255

Leu Ser Ala Glu Glu Phe Thr Glu Ala Tyr Thr Gly Lys Arg Glu Phe  
 260 265 270

Lys Arg Leu Lys Asp Gly Gly Ile Ala Leu Thr Asp Tyr Ala Phe Ser  
 275 280 285

Thr Ile Phe Val Asp Pro Pro Arg Ala Gly Ile Asp Glu Glu Thr Leu  
 290 295 300

Lys Leu Val Ser Gln Phe Asp Asn Ile Ile Tyr Ile Ser Cys Asn Pro  
 305 310 315 320

Glu Thr Leu Arg Ala Asn Leu Asp Thr Leu Ala Glu Thr His Ala Val  
 325 330 335

Glu Arg Ala Ala Leu Phe Asp Gln Phe Pro Phe Thr His His Ile Glu  
 340 345 350

Ser Gly Val Leu Leu Lys Lys Lys Ile Leu  
 355 360

<210> 195

<211> 2145

<212> DNA

<213> Neisseria meningitidis

<220>

<221> CDS

<222> (1)..(2145)

<400> 195

atg aat acc cca ttg ttc cgt ctc agc ctg ctc tcg ctt acc ctg gcg 48  
 Met Asn Thr Pro Leu Phe Arg Leu Ser Leu Leu Ser Leu Thr Leu Ala  
 1 5 10 15

gca ggt ttt gcc cat gcg gca gaa aat aat gcc aag gtc gta ctg gat	96
Ala Gly Phe Ala His Ala Ala Glu Asn Asn Ala Lys Val Val Leu Asp	
20 25 30	
acc gtt acc gta aaa ggc gac cgc caa ggc agc aaa atc cgt acc aac	144
Thr Val Thr Val Lys Gly Asp Arg Gln Gly Ser Lys Ile Arg Thr Asn	
35 40 45	
atc gtt acg ctg caa caa aaa gac gaa agc acc gca acc gat atg cgc	192
Ile Val Thr Leu Gln Gln Lys Asp Glu Ser Thr Ala Thr Asp Met Arg	
50 55 60	
gaa ctc tta aaa gaa gag ccc tcc atc gat ttc ggc ggc ggc aac ggc	240
Glu Leu Leu Lys Glu Glu Pro Ser Ile Asp Phe Gly Gly Gly Asn Gly	
65 70 75 80	
acg tcc caa ttc ctg acg ctg cgc ggc atg ggt caa aac tct gtc gac	288
Thr Ser Gln Phe Leu Thr Leu Arg Gly Met Gly Gln Asn Ser Val Asp	
85 90 95	
atc aag gtg gac aac gcc tat tcc gac agc caa atc ctt tac cac caa	336
Ile Lys Val Asp Asn Ala Tyr Ser Asp Ser Gln Ile Leu Tyr His Gln	
100 105 110	
ggc aga ttt att gtc gat ccc gct ttg gtt aaa gtc gtt tcc gta caa	384
Gly Arg Phe Ile Val Asp Pro Ala Leu Val Lys Val Val Ser Val Gln	
115 120 125	
aaa ggc gcg ggt tcc gcc tct gcc ggt atc ggc gcg acc aac ggc gcg	432
Lys Gly Ala Gly Ser Ala Ser Ala Gly Ile Gly Ala Thr Asn Gly Ala	
130 135 140	
atc atc acc aaa acc gtc gat gcc caa gac ctg ctc aaa ggc ttg gat	480
Ile Ile Thr Lys Thr Val Asp Ala Gln Asp Leu Leu Lys Gly Leu Asp	
145 150 155 160	
aaa aac tgg ggc gtg cgc ctc aac agc ggc ttt gcc agc aac gaa ggc	528
Lys Asn Trp Gly Val Arg Leu Asn Ser Gly Phe Ala Ser Asn Glu Gly	
165 170 175	
gta agc tac ggc gca agc gta ttc ggg aaa gag ggc aac ttc gac ggc	576
Val Ser Tyr Gly Ala Ser Val Phe Gly Lys Glu Gly Asn Phe Asp Gly	
180 185 190	
ttg ttc tct tac aac cgc aac aat gaa aaa gat tac gaa gca ggt aaa	624
Leu Phe Ser Tyr Asn Arg Asn Asn Glu Lys Asp Tyr Glu Ala Gly Lys	
195 200 205	

ggc ttc cgt aat aat ttc aac ggc ggc aaa acc gta ccg tac agc gcg	672
Gly Phe Arg Asn Asn Phe Asn Gly Gly Lys Thr Val Pro Tyr Ser Ala	
210 215 220	
ctg gac aaa cgc agc tac ctc gcc aaa atc gga aca agc ttc ggc gac	720
Leu Asp Lys Arg Ser Tyr Leu Ala Lys Ile Gly Thr Ser Phe Gly Asp	
225 230 235 240	
ggc gac cac cgc atc gta ttg agc cat atg aaa gac cag cac cgg ggc	768
Gly Asp His Arg Ile Val Leu Ser His Met Lys Asp Gln His Arg Gly	
245 250 255	
atc cgt acc gtc cgt gaa gaa ttt acc gtc ggc ggc gat aaa gag cga	816
Ile Arg Thr Val Arg Glu Glu Phe Thr Val Gly Gly Asp Lys Glu Arg	
260 265 270	
ata agt atg gaa cgc caa gcc cct gct tac cgc gaa acc aca caa tcc	864
Ile Ser Met Glu Arg Gln Ala Pro Ala Tyr Arg Glu Thr Thr Gln Ser	
275 280 285	
aac acc aat ttg gcg tac acg ggt aaa aac ctg ggc ttt gtc gaa aaa	912
Asn Thr Asn Leu Ala Tyr Thr Gly Lys Asn Leu Gly Phe Val Glu Lys	
290 295 300	
ctg gat gcc aac gcc tat gtg ttg gaa aaa gaa cgc tat tcc gcc gat	960
Leu Asp Ala Asn Ala Tyr Val Leu Glu Lys Glu Arg Tyr Ser Ala Asp	
305 310 315 320	
gac agc ggc acc ggt tac gca ggc aat gta aaa ggc ccc aac cat acc	1008
Asp Ser Gly Thr Gly Tyr Ala Gly Asn Val Lys Gly Pro Asn His Thr	
325 330 335	
caa atc acc act cgg ggt atg aac ttc aac ttc gac agc cgc ctt gcc	1056
Gln Ile Thr Thr Arg Gly Met Asn Phe Asn Phe Asp Ser Arg Leu Ala	
340 345 350	
gaa caa acc ctg ctg aaa tac ggt atc aac tac cgc cat cag gaa atc	1104
Glu Gln Thr Leu Leu Lys Tyr Gly Ile Asn Tyr Arg His Gln Glu Ile	
355 360 365	
aaa ccg caa gcg ttt ttg aat tca caa ttt aaa att gaa gat aaa gaa	1152
Lys Pro Gln Ala Phe Leu Asn Ser Gln Phe Lys Ile Glu Asp Lys Glu	
370 375 380	
aaa gca act gat gaa gag aaa aat aag aac cgt gaa aat gaa aaa att	1200
Lys Ala Thr Asp Glu Glu Lys Asn Lys Asn Arg Glu Asn Glu Lys Ile	
385 390 395 400	

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gcc aaa gcc tac cgt ctg acc aac ccg acc aaa acc gat acc ggc gcg 1248
Ala Lys Ala Tyr Arg Leu Thr Asn Pro Thr Lys Thr Asp Thr Gly Ala
                     405                     410                     415

tat atc gaa gcc att cac gag att gac ggc ttt acc ctg acc ggc ggg 1296
Tyr Ile Glu Ala Ile His Glu Ile Asp Gly Phe Thr Leu Thr Gly Gly
                     420                     425                     430

ctg cgt tac gac cgc ttc aag gtg aaa acc cac gac ggc aaa acc gtt 1344
Leu Arg Tyr Asp Arg Phe Lys Val Lys Thr His Asp Gly Lys Thr Val
                     435                     440                     445

tca agc aac aac ctt aac ccg agt ttc ggc gtg att tgg cag ccg cac 1392
Ser Ser Asn Asn Leu Asn Pro Ser Phe Gly Val Ile Trp Gln Pro His
                     450                     455                     460

gaa cac tgg agc ttc agc gcg agc cac aac tac gcc agc cgc agc ccg 1440
Glu His Trp Ser Phe Ser Ala Ser His Asn Tyr Ala Ser Arg Ser Pro
465                     470                     475                     480

cgc ctg tat gac gcg ctg caa acc cac ggc aaa cgc ggc atc atc tcg 1488
Arg Leu Tyr Asp Ala Leu Gln Thr His Gly Lys Arg Gly Ile Ile Ser
                     485                     490                     495

att gcc gac ggc acg aaa gcc gaa cgc gcg cgc aat acc gaa atc ggc 1536
Ile Ala Asp Gly Thr Lys Ala Glu Arg Ala Arg Asn Thr Glu Ile Gly
                     500                     505                     510

ttc aac tac aac gac ggc acg ttt gcc gca aac ggc agc tac ttc tgg 1584
Phe Asn Tyr Asn Asp Gly Thr Phe Ala Ala Asn Gly Ser Tyr Phe Trp
                     515                     520                     525

cag acc atc aaa gac gcg ctt gcc aat ccg caa aac cgc cac gac tct 1632
Gln Thr Ile Lys Asp Ala Leu Ala Asn Pro Gln Asn Arg His Asp Ser
                     530                     535                     540

gtc gcc gtc cgt gaa gcc gtc aat gcc ggt tac atc aaa aac cac ggt 1680
Val Ala Val Arg Glu Ala Val Asn Ala Gly Tyr Ile Lys Asn His Gly
545                     550                     555                     560

tac gaa ttg ggc gcg tcc tac cgc acc ggc ggc ctg act gcc aaa gtc 1728
Tyr Glu Leu Gly Ala Ser Tyr Arg Thr Gly Gly Leu Thr Ala Lys Val
                     565                     570                     575

ggc gta agc cac agc aaa ccg cgc ttt tac gat acg cac aaa gac aag 1776
Gly Val Ser His Ser Lys Pro Arg Phe Tyr Asp Thr His Lys Asp Lys
                     580                     585                     590

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ctg ttg agc gcg aat cct gaa ttt ggc gca caa gtc ggc cgc act tgg 1824  
 Leu Leu Ser Ala Asn Pro Glu Phe Gly Ala Gln Val Gly Arg Thr Trp  
           595                          600                          605

acg gct tcc ctt gcc tac cgc ttc caa aac ccg aat ctg gaa atc ggc 1872  
 Thr Ala Ser Leu Ala Tyr Arg Phe Gln Asn Pro Asn Leu Glu Ile Gly  
           610                          615                          620

tgg cgc ggc cgt tat gtt caa aaa gcc gtg ggt tcg ata ttg gtg gca 1920  
 Trp Arg Gly Arg Tyr Val Gln Lys Ala Val Gly Ser Ile Leu Val Ala  
 625                          630                          635                          640

ggt caa aaa gac cgc aac ggc aaa ttg gaa aac gtt gta cgc aaa ggt 1968  
 Gly Gln Lys Asp Arg Asn Gly Lys Leu Glu Asn Val Val Arg Lys Gly  
                           645                          650                          655

ttc ggt gtg aac gat gtc ttc gcc aac tgg aaa ccg ctg ggc aaa gac 2016  
 Phe Gly Val Asn Asp Val Phe Ala Asn Trp Lys Pro Leu Gly Lys Asp  
                           660                          665                          670

acg ctc aat gtt aat ctt tcg gtt aac aac gtg ttc aac acg ttc tac 2064  
 Thr Leu Asn Val Asn Leu Ser Val Asn Asn Val Phe Asn Thr Phe Tyr  
                           675                          680                          685

tat ccg cac agc caa cga tgg acc aat acc ctg ccg ggc gtg gga cgt 2112  
 Tyr Pro His Ser Gln Arg Trp Thr Asn Thr Leu Pro Gly Val Gly Arg  
           690                          695                          700

gat gta cgc ttg ggc gtg aac tac aag ttc taa 2145  
 Asp Val Arg Leu Gly Val Asn Tyr Lys Phe  
 705                          710                          715

<210> 196

<211> 714

<212> PRT

<213> Neisseria meningitidis

<400> 196

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Ala Gly Phe Ala His Ala Ala Glu Asn Asn Ala Lys Val Val Leu Asp  
                           20                          25                          30

Thr Val Thr Val Lys Gly Asp Arg Gln Gly Ser Lys Ile Arg Thr Asn  
           35                          40                          45

Ile Val Thr Leu Gln Gln Lys Asp Glu Ser Thr Ala Thr Asp Met Arg  
 50 55 60  
 Glu Leu Leu Lys Glu Glu Pro Ser Ile Asp Phe Gly Gly Gly Asn Gly  
 65 70 75 80  
 Thr Ser Gln Phe Leu Thr Leu Arg Gly Met Gly Gln Asn Ser Val Asp  
 85 90 95  
 Ile Lys Val Asp Asn Ala Tyr Ser Asp Ser Gln Ile Leu Tyr His Gln  
 100 105 110  
 Gly Arg Phe Ile Val Asp Pro Ala Leu Val Lys Val Val Ser Val Gln  
 115 120 125  
 Lys Gly Ala Gly Ser Ala Ser Ala Gly Ile Gly Ala Thr Asn Gly Ala  
 130 135 140  
 Ile Ile Thr Lys Thr Val Asp Ala Gln Asp Leu Leu Lys Gly Leu Asp  
 145 150 155 160  
 Lys Asn Trp Gly Val Arg Leu Asn Ser Gly Phe Ala Ser Asn Glu Gly  
 165 170 175  
 Val Ser Tyr Gly Ala Ser Val Phe Gly Lys Glu Gly Asn Phe Asp Gly  
 180 185 190  
 Leu Phe Ser Tyr Asn Arg Asn Asn Glu Lys Asp Tyr Glu Ala Gly Lys  
 195 200 205  
 Gly Phe Arg Asn Asn Phe Asn Gly Gly Lys Thr Val Pro Tyr Ser Ala  
 210 215 220  
 Leu Asp Lys Arg Ser Tyr Leu Ala Lys Ile Gly Thr Ser Phe Gly Asp  
 225 230 235 240  
 Gly Asp His Arg Ile Val Leu Ser His Met Lys Asp Gln His Arg Gly  
 245 250 255  
 Ile Arg Thr Val Arg Glu Glu Phe Thr Val Gly Gly Asp Lys Glu Arg  
 260 265 270  
 Ile Ser Met Glu Arg Gln Ala Pro Ala Tyr Arg Glu Thr Thr Gln Ser  
 275 280 285  
 Asn Thr Asn Leu Ala Tyr Thr Gly Lys Asn Leu Gly Phe Val Glu Lys  
 290 295 300



Leu Asp Ala Asn Ala Tyr Val Leu Glu Lys Glu Arg Tyr Ser Ala Asp  
 305 310 315 320

Asp Ser Gly Thr Gly Tyr Ala Gly Asn Val Lys Gly Pro Asn His Thr  
 325 330 335

Gln Ile Thr Thr Arg Gly Met Asn Phe Asn Phe Asp Ser Arg Leu Ala  
 340 345 350

Glu Gln Thr Leu Leu Lys Tyr Gly Ile Asn Tyr Arg His Gln Glu Ile  
 355 360 365

Lys Pro Gln Ala Phe Leu Asn Ser Gln Phe Lys Ile Glu Asp Lys Glu  
 370 375 380

Lys Ala Thr Asp Glu Glu Lys Asn Lys Asn Arg Glu Asn Glu Lys Ile  
 385 390 395 400

Ala Lys Ala Tyr Arg Leu Thr Asn Pro Thr Lys Thr Asp Thr Gly Ala  
 405 410 415

Tyr Ile Glu Ala Ile His Glu Ile Asp Gly Phe Thr Leu Thr Gly Gly  
 420 425 430

Leu Arg Tyr Asp Arg Phe Lys Val Lys Thr His Asp Gly Lys Thr Val  
 435 440 445

Ser Ser Asn Asn Leu Asn Pro Ser Phe Gly Val Ile Trp Gln Pro His  
 450 455 460

Glu His Trp Ser Phe Ser Ala Ser His Asn Tyr Ala Ser Arg Ser Pro  
 465 470 475 480

Arg Leu Tyr Asp Ala Leu Gln Thr His Gly Lys Arg Gly Ile Ile Ser  
 485 490 495

Ile Ala Asp Gly Thr Lys Ala Glu Arg Ala Arg Asn Thr Glu Ile Gly  
 500 505 510

Phe Asn Tyr Asn Asp Gly Thr Phe Ala Ala Asn Gly Ser Tyr Phe Trp  
 515 520 525

Gln Thr Ile Lys Asp Ala Leu Ala Asn Pro Gln Asn Arg His Asp Ser  
 530 535 540

Val Ala Val Arg Glu Ala Val Asn Ala Gly Tyr Ile Lys Asn His Gly  
 545 550 555 560

Tyr Glu Leu Gly Ala Ser Tyr Arg Thr Gly Gly Leu Thr Ala Lys Val  
                   565                                  570                                  575

Gly Val Ser His Ser Lys Pro Arg Phe Tyr Asp Thr His Lys Asp Lys  
                   580                                  585                                  590

Leu Leu Ser Ala Asn Pro Glu Phe Gly Ala Gln Val Gly Arg Thr Trp  
                   595                                  600                                  605

Thr Ala Ser Leu Ala Tyr Arg Phe Gln Asn Pro Asn Leu Glu Ile Gly  
                   610                                  615                                  620

Trp Arg Gly Arg Tyr Val Gln Lys Ala Val Gly Ser Ile Leu Val Ala  
   625                                  630                                  635                                  640

Gly Gln Lys Asp Arg Asn Gly Lys Leu Glu Asn Val Val Arg Lys Gly  
                   645                                  650                                  655

Phe Gly Val Asn Asp Val Phe Ala Asn Trp Lys Pro Leu Gly Lys Asp  
                   660                                  665                                  670

Thr Leu Asn Val Asn Leu Ser Val Asn Asn Val Phe Asn Thr Phe Tyr  
                   675                                  680                                  685

Tyr Pro His Ser Gln Arg Trp Thr Asn Thr Leu Pro Gly Val Gly Arg  
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<211> 2625

<212> DNA

<213> Neisseria meningitidis

<220>

<221> CDS

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<400> 197

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aaa ggc cac acc gtc gtc cgc tct tcc agc ctc gtg ccg cac gac gac 96

Lys	Gly	His	Thr	Val	Val	Arg	Ser	Ser	Ser	Leu	Val	Pro	His	Asp	Asp		
			20					25					30				
ccg	acc	ctg	ctg	ttt	acc	aac	gcg	ggc	atg	aac	cag	ttt	aaa	gac	gta	144	
Pro	Thr	Leu	Leu	Phe	Thr	Asn	Ala	Gly	Met	Asn	Gln	Phe	Lys	Asp	Val		
		35					40				45						
ttc	tta	ggt	ttc	gac	aaa	cgc	ccg	tac	agc	cgc	gcc	acc	acc	gcg	caa	192	
Phe	Leu	Gly	Phe	Asp	Lys	Arg	Pro	Tyr	Ser	Arg	Ala	Thr	Thr	Ala	Gln		
	50					55					60						
aaa	tgc	gta	cgc	gca	ggc	ggc	aaa	cac	aac	gac	ttg	gaa	aac	gtc	ggc	240	
Lys	Cys	Val	Arg	Ala	Gly	Gly	Lys	His	Asn	Asp	Leu	Glu	Asn	Val	Gly		
	65				70				75					80			
tac	acc	gcc	cgc	cac	cac	acc	ttc	ttt	gaa	atg	atg	ggc	aac	ttc	tcc	288	
Tyr	Thr	Ala	Arg	His	His	Thr	Phe	Phe	Glu	Met	Met	Gly	Asn	Phe	Ser		
				85				90						95			
ttc	ggc	gac	tac	ttc	aaa	cgc	gac	gcc	atc	cac	ttc	gct	tgg	gaa	ttt	336	
Phe	Gly	Asp	Tyr	Phe	Lys	Arg	Asp	Ala	Ile	His	Phe	Ala	Trp	Glu	Phe		
		100						105				110					
ctg	act	tcc	ccc	gaa	tgg	ctc	aac	atc	cct	aaa	gac	aaa	ctg	ttg	gcg	384	
Leu	Thr	Ser	Pro	Glu	Trp	Leu	Asn	Ile	Pro	Lys	Asp	Lys	Leu	Leu	Ala		
		115					120					125					
acc	gtt	tac	gcg	gaa	gac	gac	gaa	gcc	tac	aac	atc	tgg	ttg	aac	gaa	432	
Thr	Val	Tyr	Ala	Glu	Asp	Asp	Glu	Ala	Tyr	Asn	Ile	Trp	Leu	Asn	Glu		
	130					135					140						
atc	ggt	atg	ccg	tcc	gag	cgc	atc	gtc	cgc	atc	ggc	gac	aac	aaa	ggc	480	
Ile	Gly	Met	Pro	Ser	Glu	Arg	Ile	Val	Arg	Ile	Gly	Asp	Asn	Lys	Gly		
145					150				155					160			
gcg	aaa	tac	gca	tcc	gac	aac	ttc	tgg	caa	atg	ggc	gac	acc	ggc	cct	528	
Ala	Lys	Tyr	Ala	Ser	Asp	Asn	Phe	Trp	Gln	Met	Gly	Asp	Thr	Gly	Pro		
				165				170						175			
tgc	ggc	ccc	tgc	tcc	gaa	att	ttc	tac	gac	cac	ggc	gaa	gaa	atc	tgg	576	
Cys	Gly	Pro	Cys	Ser	Glu	Ile	Phe	Tyr	Asp	His	Gly	Glu	Glu	Ile	Trp		
		180						185					190				
ggc	ggc	att	ccc	ggc	agt	ccc	gaa	gaa	gac	ggc	gac	cgc	tgg	atc	gaa	624	
Gly	Gly	Ile	Pro	Gly	Ser	Pro	Glu	Glu	Asp	Gly	Asp	Arg	Trp	Ile	Glu		
		195				200						205					
att	tgg	aac	tgc	gta	ttt	atg	cag	ttc	aac	cgc	gac	gaa	caa	ggc	aat	672	

Ile	Trp	Asn	Cys	Val	Phe	Met	Gln	Phe	Asn	Arg	Asp	Glu	Gln	Gly	Asn		
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atg	aac	ccg	ctt	ccc	aaa	cct	tcc	gtc	gat	acc	ggg	atg	ggc	ttg	gaa	720	
Met	Asn	Pro	Leu	Pro	Lys	Pro	Ser	Val	Asp	Thr	Gly	Met	Gly	Leu	Glu		
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cgc	ata	gcc	gcc	gtc	atg	cag	cat	gtt	cac	agc	aac	tac	gaa	atc	gac	768	
Arg	Ile	Ala	Ala	Val	Met	Gln	His	Val	His	Ser	Asn	Tyr	Glu	Ile	Asp		
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ttg	ttc	caa	gac	ctg	ctc	aaa	gcc	gtt	gcc	cgc	gaa	acc	ggc	gcg	ccg	816	
Leu	Phe	Gln	Asp	Leu	Leu	Lys	Ala	Val	Ala	Arg	Glu	Thr	Gly	Ala	Pro		
			260					265						270			
ttc	aga	atg	gaa	gaa	ccc	agc	ctg	aaa	gtc	atc	gcc	gac	cac	atc	cgc	864	
Phe	Arg	Met	Glu	Glu	Pro	Ser	Leu	Lys	Val	Ile	Ala	Asp	His	Ile	Arg		
	275						280					285					
tcc	tgc	tcg	ttc	ctg	att	gca	gac	ggc	gtc	ttg	cct	tcc	aac	gaa	ggc	912	
Ser	Cys	Ser	Phe	Leu	Ile	Ala	Asp	Gly	Val	Leu	Pro	Ser	Asn	Glu	Gly		
	290					295					300						
cgc	ggc	tac	gta	ttg	cgc	cgc	att	atc	cgc	cgc	gcc	gtg	cgc	cac	ggc	960	
Arg	Gly	Tyr	Val	Leu	Arg	Arg	Ile	Ile	Arg	Arg	Ala	Val	Arg	His	Gly		
305					310				315						320		
tac	aaa	ctg	ggc	caa	agc	aaa	ccg	ttc	ttc	cac	aaa	ctc	gtt	gcc	gat	1008	
Tyr	Lys	Leu	Gly	Gln	Ser	Lys	Pro	Phe	Phe	His	Lys	Leu	Val	Ala	Asp		
				325				330						335			
ttg	gtc	aaa	gag	atg	ggc	ggc	gcc	tac	cct	gaa	ttg	aaa	gaa	aaa	caa	1056	
Leu	Val	Lys	Glu	Met	Gly	Gly	Ala	Tyr	Pro	Glu	Leu	Lys	Glu	Lys	Gln		
			340					345					350				
gcc	caa	atc	gaa	gaa	gca	ttg	aaa	aac	gaa	gaa	agc	cgt	ttt	gcc	caa	1104	
Ala	Gln	Ile	Glu	Glu	Ala	Leu	Lys	Asn	Glu	Glu	Ser	Arg	Phe	Ala	Gln		
			355				360					365					
acg	ctg	gaa	acc	ggc	atg	gct	ttg	ttg	gaa	aac	gcg	ctg	gtc	aaa	ggc	1152	
Thr	Leu	Glu	Thr	Gly	Met	Ala	Leu	Leu	Glu	Asn	Ala	Leu	Val	Lys	Gly		
	370					375				380							
ggc	aaa	aca	ctc	ggc	ggc	gaa	atc	atc	ttc	aaa	ctc	tac	gat	acc	tac	1200	
Gly	Lys	Thr	Leu	Gly	Gly	Glu	Ile	Ile	Phe	Lys	Leu	Tyr	Asp	Thr	Tyr		
385					390				395						400		
ggc	ttc	cca	tac	gac	ttg	act	gcc	gac	atc	tgc	cgc	gaa	cgc	aat	atc	1248	

Gly Phe Pro Tyr Asp Leu Thr Ala Asp Ile Cys Arg Glu Arg Asn Ile	
405 410 415	
gaa ccg gac gaa gca ggc ttc gag cgc gaa atg gaa gcc caa cgc gca	1296
Glu Pro Asp Glu Ala Gly Phe Glu Arg Glu Met Glu Ala Gln Arg Ala	
420 425 430	
cgc gca cgc gcc gcc caa agc ttc aaa gcc aac gcc caa ctg cct tat	1344
Arg Ala Arg Ala Ala Gln Ser Phe Lys Ala Asn Ala Gln Leu Pro Tyr	
435 440 445	
gac ggt caa gac acc gag ttt aaa ggt tat agc gaa cgc caa acc gaa	1392
Asp Gly Gln Asp Thr Glu Phe Lys Gly Tyr Ser Glu Arg Gln Thr Glu	
450 455 460	
tcc aaa gtc ctc gcc ctc tac aaa gac ggc gag caa gtc aac gaa ttg	1440
Ser Lys Val Leu Ala Leu Tyr Lys Asp Gly Glu Gln Val Asn Glu Leu	
465 470 475 480	
aac gaa ggc gac agc ggc gca gtc gtc atc gac ttt acc ccg ttc tat	1488
Asn Glu Gly Asp Ser Gly Ala Val Val Ile Asp Phe Thr Pro Phe Tyr	
485 490 495	
gca gaa tcc ggc ggc caa gtc ggc gat gtc ggc tat atc ttc tca ggc	1536
Ala Glu Ser Gly Gly Gln Val Gly Asp Val Gly Tyr Ile Phe Ser Gly	
500 505 510	
gaa aac cgc ttt gaa gta cgc gat acc caa aaa atc aaa gcg gcc gta	1584
Glu Asn Arg Phe Glu Val Arg Asp Thr Gln Lys Ile Lys Ala Ala Val	
515 520 525	
ttc ggt caa ttc ggc gta caa act tca ggc cgt ctg aaa gtc ggc gac	1632
Phe Gly Gln Phe Gly Val Gln Thr Ser Gly Arg Leu Lys Val Gly Asp	
530 535 540	
agc gtt acc gcc aaa gtg gac gac gaa atc cgc aat gcc aat atg cgc	1680
Ser Val Thr Ala Lys Val Asp Asp Glu Ile Arg Asn Ala Asn Met Arg	
545 550 555 560	
aac cac agc gca acc cac ttg atg cac aaa gcc ctg cgc gat gta ttg	1728
Asn His Ser Ala Thr His Leu Met His Lys Ala Leu Arg Asp Val Leu	
565 570 575	
ggc aga cac gtc gaa caa aaa ggc tct ttg gtt acc gcc gaa tcc acc	1776
Gly Arg His Val Glu Gln Lys Gly Ser Leu Val Thr Ala Glu Ser Thr	
580 585 590	
cgt ttc gac att tcc cat ccc caa gcg gta act gcc gaa gaa att gcc	1824

Arg	Phe	Asp	Ile	Ser	His	Pro	Gln	Ala	Val	Thr	Ala	Glu	Glu	Ile	Ala		
		595					600					605					
gaa	gta	gaa	cgc	cgc	gtc	aac	gaa	gcc	att	ttg	gcg	aac	gtt	gcc	gtc	1872	
Glu	Val	Glu	Arg	Arg	Val	Asn	Glu	Ala	Ile	Leu	Ala	Asn	Val	Ala	Val		
	610					615				620							
aat	gca	gcc	att	atg	agc	atg	gaa	gac	gcg	caa	aaa	acc	ggc	gcg	atg	1920	
Asn	Ala	Ala	Ile	Met	Ser	Met	Glu	Asp	Ala	Gln	Lys	Thr	Gly	Ala	Met		
625				630					635					640			
atg	ctc	ttc	ggc	gaa	aaa	tac	ggc	gaa	gaa	gtg	cgc	gta	ctg	caa	atg	1968	
Met	Leu	Phe	Gly	Glu	Lys	Tyr	Gly	Glu	Glu	Val	Arg	Val	Leu	Gln	Met		
			645					650					655				
ggc	ggt	ttc	tct	acc	gaa	ttg	tgc	ggc	ggc	aca	cac	gtt	tca	cgc	acc	2016	
Gly	Gly	Phe	Ser	Thr	Glu	Leu	Cys	Gly	Gly	Thr	His	Val	Ser	Arg	Thr		
			660					665					670				
ggc	gac	atc	ggc	ctc	ttc	aaa	atc	atc	agc	gaa	ggc	ggt	att	gcc	gca	2064	
Gly	Asp	Ile	Gly	Leu	Phe	Lys	Ile	Ile	Ser	Glu	Gly	Gly	Ile	Ala	Ala		
	675					680						685					
ggc	gtg	cgc	cgt	atc	gaa	gcc	atc	acc	ggc	ctg	aac	gca	ctc	aaa	tgg	2112	
Gly	Val	Arg	Arg	Ile	Glu	Ala	Ile	Thr	Gly	Leu	Asn	Ala	Leu	Lys	Trp		
	690					695					700						
gcg	caa	gag	caa	gag	cgt	ttg	gtg	aaa	gac	att	att	gcc	gaa	acc	aaa	2160	
Ala	Gln	Glu	Gln	Glu	Arg	Leu	Val	Lys	Asp	Ile	Ile	Ala	Glu	Thr	Lys		
705				710					715					720			
gcc	caa	acc	gaa	aaa	gac	gta	ctg	gca	aaa	atc	caa	gca	ggc	gcg	gca	2208	
Ala	Gln	Thr	Glu	Lys	Asp	Val	Leu	Ala	Lys	Ile	Gln	Ala	Gly	Ala	Ala		
			725					730					735				
cac	gcc	aaa	gca	ttg	gaa	aaa	gaa	ttg	gca	cgc	gcc	aaa	gcc	gaa	ctc	2256	
His	Ala	Lys	Ala	Leu	Glu	Lys	Glu	Leu	Ala	Arg	Ala	Lys	Ala	Glu	Leu		
			740					745					750				
gcc	gtc	cac	gca	ggc	gcc	aaa	ctc	ttg	gac	gat	gca	aaa	gac	ttg	ggc	2304	
Ala	Val	His	Ala	Gly	Ala	Lys	Leu	Leu	Asp	Asp	Ala	Lys	Asp	Leu	Gly		
	755					760						765					
gca	gcc	aaa	ctc	gtt	gcc	gcc	caa	atc	gaa	gcc	gac	gca	gcc	gcc	ctg	2352	
Ala	Ala	Lys	Leu	Val	Ala	Ala	Gln	Ile	Glu	Ala	Asp	Ala	Ala	Ala	Leu		
	770					775					780						
cgc	gaa	atc	gtt	acc	gat	tta	acc	ggt	aaa	tcc	gac	aac	gcc	gtg	att	2400	

Arg Glu Ile Val Thr Asp Leu Thr Gly Lys Ser Asp Asn Ala Val Ile  
 785 790 795 800

ctt tta gcg gca gta aac gac ggc aaa gtc tcc ctg tgc gcc ggc gta 2448  
 Leu Leu Ala Ala Val Asn Asp Gly Lys Val Ser Leu Cys Ala Gly Val  
 805 810 815

tcc aaa ccg ttg acc ggc aaa gtg aaa gca ggc gat ctg gtt aaa ttt 2496  
 Ser Lys Pro Leu Thr Gly Lys Val Lys Ala Gly Asp Leu Val Lys Phe  
 820 825 830

gca gcc gaa caa gtc ggc ggc aaa ggc ggc ggc aga cca gat ttg gcg 2544  
 Ala Ala Glu Gln Val Gly Gly Lys Gly Gly Gly Arg Pro Asp Leu Ala  
 835 840 845

caa gcc ggc ggc acg gat gcc gac aaa ttg ccc gcc gtg ttg gat agc 2592  
 Gln Ala Gly Gly Thr Asp Ala Asp Lys Leu Pro Ala Val Leu Asp Ser  
 850 855 860

gtg aaa gac tgg gtc ggc gcg aag ctg gtt tga 2625  
 Val Lys Asp Trp Val Gly Ala Lys Leu Val  
 865 870 875

&lt;210&gt; 198

&lt;211&gt; 874

&lt;212&gt; PRT

&lt;213&gt; Neisseria meningitidis

&lt;400&gt; 198

Met Lys Thr Ser Glu Leu Arg Gln Lys Phe Leu Lys Phe Phe Glu Thr  
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Lys Gly His Thr Val Val Arg Ser Ser Ser Leu Val Pro His Asp Asp  
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Pro Thr Leu Leu Phe Thr Asn Ala Gly Met Asn Gln Phe Lys Asp Val  
 35 40 45

Phe Leu Gly Phe Asp Lys Arg Pro Tyr Ser Arg Ala Thr Thr Ala Gln  
 50 55 60

Lys Cys Val Arg Ala Gly Gly Lys His Asn Asp Leu Glu Asn Val Gly  
 65 70 75 80

Tyr Thr Ala Arg His His Thr Phe Phe Glu Met Met Gly Asn Phe Ser  
 85 90 95

Phe Gly Asp Tyr Phe Lys Arg Asp Ala Ile His Phe Ala Trp Glu Phe			
100	105	110	
Leu Thr Ser Pro Glu Trp Leu Asn Ile Pro Lys Asp Lys Leu Leu Ala			
115	120	125	
Thr Val Tyr Ala Glu Asp Asp Glu Ala Tyr Asn Ile Trp Leu Asn Glu			
130	135	140	
Ile Gly Met Pro Ser Glu Arg Ile Val Arg Ile Gly Asp Asn Lys Gly			
145	150	155	160
Ala Lys Tyr Ala Ser Asp Asn Phe Trp Gln Met Gly Asp Thr Gly Pro			
165	170	175	
Cys Gly Pro Cys Ser Glu Ile Phe Tyr Asp His Gly Glu Glu Ile Trp			
180	185	190	
Gly Gly Ile Pro Gly Ser Pro Glu Glu Asp Gly Asp Arg Trp Ile Glu			
195	200	205	
Ile Trp Asn Cys Val Phe Met Gln Phe Asn Arg Asp Glu Gln Gly Asn			
210	215	220	
Met Asn Pro Leu Pro Lys Pro Ser Val Asp Thr Gly Met Gly Leu Glu			
225	230	235	240
Arg Ile Ala Ala Val Met Gln His Val His Ser Asn Tyr Glu Ile Asp			
245	250	255	
Leu Phe Gln Asp Leu Leu Lys Ala Val Ala Arg Glu Thr Gly Ala Pro			
260	265	270	
Phe Arg Met Glu Glu Pro Ser Leu Lys Val Ile Ala Asp His Ile Arg			
275	280	285	
Ser Cys Ser Phe Leu Ile Ala Asp Gly Val Leu Pro Ser Asn Glu Gly			
290	295	300	
Arg Gly Tyr Val Leu Arg Arg Ile Ile Arg Arg Ala Val Arg His Gly			
305	310	315	320
Tyr Lys Leu Gly Gln Ser Lys Pro Phe Phe His Lys Leu Val Ala Asp			
325	330	335	
Leu Val Lys Glu Met Gly Gly Ala Tyr Pro Glu Leu Lys Glu Lys Gln			
340	345	350	



Ala Gln Ile Glu Glu Ala Leu Lys Asn Glu Glu Ser Arg Phe Ala Gln  
 355 360 365  
 Thr Leu Glu Thr Gly Met Ala Leu Leu Glu Asn Ala Leu Val Lys Gly  
 370 375 380  
 Gly Lys Thr Leu Gly Gly Glu Ile Ile Phe Lys Leu Tyr Asp Thr Tyr  
 385 390 395 400  
 Gly Phe Pro Tyr Asp Leu Thr Ala Asp Ile Cys Arg Glu Arg Asn Ile  
 405 410 415  
 Glu Pro Asp Glu Ala Gly Phe Glu Arg Glu Met Glu Ala Gln Arg Ala  
 420 425 430  
 Arg Ala Arg Ala Ala Gln Ser Phe Lys Ala Asn Ala Gln Leu Pro Tyr  
 435 440 445  
 Asp Gly Gln Asp Thr Glu Phe Lys Gly Tyr Ser Glu Arg Gln Thr Glu  
 450 455 460  
 Ser Lys Val Leu Ala Leu Tyr Lys Asp Gly Glu Gln Val Asn Glu Leu  
 465 470 475 480  
 Asn Glu Gly Asp Ser Gly Ala Val Val Ile Asp Phe Thr Pro Phe Tyr  
 485 490 495  
 Ala Glu Ser Gly Gly Gln Val Gly Asp Val Gly Tyr Ile Phe Ser Gly  
 500 505 510  
 Glu Asn Arg Phe Glu Val Arg Asp Thr Gln Lys Ile Lys Ala Ala Val  
 515 520 525  
 Phe Gly Gln Phe Gly Val Gln Thr Ser Gly Arg Leu Lys Val Gly Asp  
 530 535 540  
 Ser Val Thr Ala Lys Val Asp Asp Glu Ile Arg Asn Ala Asn Met Arg  
 545 550 555 560  
 Asn His Ser Ala Thr His Leu Met His Lys Ala Leu Arg Asp Val Leu  
 565 570 575  
 Gly Arg His Val Glu Gln Lys Gly Ser Leu Val Thr Ala Glu Ser Thr  
 580 585 590  
 Arg Phe Asp Ile Ser His Pro Gln Ala Val Thr Ala Glu Glu Ile Ala  
 595 600 605

Glu Val Glu Arg Arg Val Asn Glu Ala Ile Leu Ala Asn Val Ala Val  
 610 615 620

Asn Ala Ala Ile Met Ser Met Glu Asp Ala Gln Lys Thr Gly Ala Met  
 625 630 635 640

Met Leu Phe Gly Glu Lys Tyr Gly Glu Glu Val Arg Val Leu Gln Met  
 645 650 655

Gly Gly Phe Ser Thr Glu Leu Cys Gly Gly Thr His Val Ser Arg Thr  
 660 665 670

Gly Asp Ile Gly Leu Phe Lys Ile Ile Ser Glu Gly Gly Ile Ala Ala  
 675 680 685

Gly Val Arg Arg Ile Glu Ala Ile Thr Gly Leu Asn Ala Leu Lys Trp  
 690 695 700

Ala Gln Glu Gln Glu Arg Leu Val Lys Asp Ile Ile Ala Glu Thr Lys  
 705 710 715 720

Ala Gln Thr Glu Lys Asp Val Leu Ala Lys Ile Gln Ala Gly Ala Ala  
 725 730 735

His Ala Lys Ala Leu Glu Lys Glu Leu Ala Arg Ala Lys Ala Glu Leu  
 740 745 750

Ala Val His Ala Gly Ala Lys Leu Leu Asp Asp Ala Lys Asp Leu Gly  
 755 760 765

Ala Ala Lys Leu Val Ala Ala Gln Ile Glu Ala Asp Ala Ala Ala Leu  
 770 775 780

Arg Glu Ile Val Thr Asp Leu Thr Gly Lys Ser Asp Asn Ala Val Ile  
 785 790 795 800

Leu Leu Ala Ala Val Asn Asp Gly Lys Val Ser Leu Cys Ala Gly Val  
 805 810 815

Ser Lys Pro Leu Thr Gly Lys Val Lys Ala Gly Asp Leu Val Lys Phe  
 820 825 830

Ala Ala Glu Gln Val Gly Gly Lys Gly Gly Gly Arg Pro Asp Leu Ala  
 835 840 845

Gln Ala Gly Gly Thr Asp Ala Asp Lys Leu Pro Ala Val Leu Asp Ser  
 850 855 860

Val Lys Asp Trp Val Gly Ala Lys Leu Val  
865 870

<210> 199  
<211> 207  
<212> DNA  
<213> Neisseria meningitidis

<220>  
<221> CDS  
<222> (1)..(207)

<400> 199  
gtg caa aga ggc cgt ctg aaa ggt ctc gtt tgc cgt agg ttg ggt cgc 48  
Val Gln Arg Gly Arg Leu Lys Gly Leu Val Cys Arg Arg Leu Gly Arg  
1 5 10 15  
gac cca aca aat ttt gtg aag tat aaa aat gtt ggt cat gac cca acc 96  
Asp Pro Thr Asn Phe Val Lys Tyr Lys Asn Val Gly His Asp Pro Thr  
20 25 30  
tac ctg cct ttt tgt aca aag agg cta tct gaa agg cct tgt ttg ccg 144  
Tyr Leu Pro Phe Cys Thr Lys Arg Leu Ser Glu Arg Pro Cys Leu Pro  
35 40 45  
tat ggt ggg tcg cga ccc agc aga ttt tta tta ggg tat gac cca agc 192  
Tyr Gly Gly Ser Arg Pro Ser Arg Phe Leu Leu Gly Tyr Asp Pro Ser  
50 55 60  
tac ttg cta cga taa 207  
Tyr Leu Leu Arg  
65

<210> 200  
<211> 68  
<212> PRT  
<213> Neisseria meningitidis

<400> 200  
Val Gln Arg Gly Arg Leu Lys Gly Leu Val Cys Arg Arg Leu Gly Arg  
1 5 10 15  
Asp Pro Thr Asn Phe Val Lys Tyr Lys Asn Val Gly His Asp Pro Thr  
20 25 30

Tyr Leu Pro Phe Cys Thr Lys Arg Leu Ser Glu Arg Pro Cys Leu Pro  
                   35                                  40                                  45

Tyr Gly Gly Ser Arg Pro Ser Arg Phe Leu Leu Gly Tyr Asp Pro Ser  
           50                                  55                                  60

Tyr Leu Leu Arg  
       65

<210> 201

<211> 2277

<212> DNA

<213> Neisseria meningitidis

<220>

<221> CDS

<222> (1)..(2277)

<400> 201

atg gca caa act aca ctc aaa ccc att gtt tta tca att ctt tta atc 48  
 Met Ala Gln Thr Thr Leu Lys Pro Ile Val Leu Ser Ile Leu Leu Ile  
       1                                  5                                  10                                  15

aac aca ccc ctc ctc gcc caa gcg cat gaa act gag caa tcg gtg gat 96  
 Asn Thr Pro Leu Leu Ala Gln Ala His Glu Thr Glu Gln Ser Val Asp  
                                   20                                  25                                  30

ttg gaa acg gtc agc gtc gtc ggc aaa agc cgt ccg cgc gcc acg tcg 144  
 Leu Glu Thr Val Ser Val Val Gly Lys Ser Arg Pro Arg Ala Thr Ser  
                                   35                                  40                                  45

ggg ctg ttg cac act tcg acc gcc tcc gac aaa atc atc tcc ggc gat 192  
 Gly Leu Leu His Thr Ser Thr Ala Ser Asp Lys Ile Ile Ser Gly Asp  
                                   50                                  55                                  60

acc ttg cgc caa aaa gcc gtc aac ttg ggc gac gct tta gac ggc gta 240  
 Thr Leu Arg Gln Lys Ala Val Asn Leu Gly Asp Ala Leu Asp Gly Val  
       65                                  70                                  75                                  80

ccg ggc atc cac gct tcg caa tac ggc ggc ggc gcg tct gct ccc gtc 288  
 Pro Gly Ile His Ala Ser Gln Tyr Gly Gly Gly Ala Ser Ala Pro Val  
                                   85                                  90                                  95

att cgc ggt caa aca ggc agg cgg att aaa gtg ttg aac cat cac ggc 336  
 Ile Arg Gly Gln Thr Gly Arg Arg Ile Lys Val Leu Asn His His Gly  
                                   100                                  105                                  110

gaa aca ggc gat atg gcg gat ttt tcg ccc gat cac gcc att atg gta	384
Glu Thr Gly Asp Met Ala Asp Phe Ser Pro Asp His Ala Ile Met Val	
115 120 125	
gat acc gcc ttg tcg caa cag gtc gaa atc ctg cgc ggg ccg gtt acg	432
Asp Thr Ala Leu Ser Gln Gln Val Glu Ile Leu Arg Gly Pro Val Thr	
130 135 140	
ctc ttg tac agc tcg ggc aat gtg gcg ggg ctg gtc gat gtt gcc gat	480
Ileu Leu Tyr Ser Ser Gly Asn Val Ala Gly Leu Val Asp Val Ala Asp	
145 150 155 160	
ggc aaa atc ccc gaa aaa atg cct gaa aac ggc gta tcg ggc gaa ctc	528
Gly Lys Ile Pro Glu Lys Met Pro Glu Asn Gly Val Ser Gly Glu Leu	
165 170 175	
gga ttg cgt ttg agc agc ggc aat ctg gaa aaa ctc acg tcc ggc ggc	576
Gly Leu Arg Leu Ser Ser Gly Asn Leu Glu Lys Leu Thr Ser Gly Gly	
180 185 190	
atc aat atc ggt ttg ggc aaa aac ttt gta ttg cac acg gaa ggg ctg	624
Ile Asn Ile Gly Leu Gly Lys Asn Phe Val Leu His Thr Glu Gly Leu	
195 200 205	
tac cgc aaa tcg ggg gat tac gcc gta ccg cgt tac cgc aat ctg aaa	672
Tyr Arg Lys Ser Gly Asp Tyr Ala Val Pro Arg Tyr Arg Asn Leu Lys	
210 215 220	
cgc ctg ccc gac agc cac gcc gat tcg caa acg ggc agc atc ggg ctg	720
Arg Leu Pro Asp Ser His Ala Asp Ser Gln Thr Gly Ser Ile Gly Leu	
225 230 235 240	
tct tgg gtt ggc gaa aaa ggt ttt atc ggc gta gcg tac agc gac cgt	768
Ser Trp Val Gly Glu Lys Gly Phe Ile Gly Val Ala Tyr Ser Asp Arg	
245 250 255	
cgc gac caa tat ggt ctg cct gcc cac agc cac gaa tac gat gat tgc	816
Arg Asp Gln Tyr Gly Leu Pro Ala His Ser His Glu Tyr Asp Asp Cys	
260 265 270	
cac gcc gac atc atc tgg caa aag agc ttg att aac aaa cgc tat tta	864
His Ala Asp Ile Ile Trp Gln Lys Ser Leu Ile Asn Lys Arg Tyr Leu	
275 280 285	
cag ctt tat ccg cac ctg ttg acc gaa gaa gac atc gat tac gac aat	912
Gln Leu Tyr Pro His Leu Leu Thr Glu Glu Asp Ile Asp Tyr Asp Asn	
290 295 300	

ccg ggc ttg agc tgc ggc ttc cac gac gac gat aat gca cac gca cac	960
Pro Gly Leu Ser Cys Gly Phe His Asp Asp Asp Asn Ala His Ala His	
305 310 315 320	
acc cac agc ggc aga ccg tgg ata gac ctg cgc aac aaa cgc tac gaa	1008
Thr His Ser Gly Arg Pro Trp Ile Asp Leu Arg Asn Lys Arg Tyr Glu	
325 330 335	
ctc cgt gcc gaa tgg aag caa ccg ttc ccc ggt ttt gaa gcc ctg cgc	1056
Leu Arg Ala Glu Trp Lys Gln Pro Phe Pro Gly Phe Glu Ala Leu Arg	
340 345 350	
gta cac ctg aac cgc aac gac tac cgc cac gac gaa aaa gca ggc gat	1104
Val His Leu Asn Arg Asn Asp Tyr Arg His Asp Glu Lys Ala Gly Asp	
355 360 365	
gca gtc gaa aac ttt ttt aac aac caa acg caa aac gcc cgc atc gag	1152
Ala Val Glu Asn Phe Phe Asn Asn Gln Thr Gln Asn Ala Arg Ile Glu	
370 375 380	
ttg cgc cac caa ccc ata ggt cgt ctg aaa ggc agc tgg ggc gtg caa	1200
Leu Arg His Gln Pro Ile Gly Arg Leu Lys Gly Ser Trp Gly Val Gln	
385 390 395 400	
tat tta caa caa aaa tcc agt gct tta tct gcc ata tcc gaa gcg gtt	1248
Tyr Leu Gln Gln Lys Ser Ser Ala Leu Ser Ala Ile Ser Glu Ala Val	
405 410 415	
aaa caa ccg atg ctg ctt gac aac aaa gtg caa cat tac agc ttt ttc	1296
Lys Gln Pro Met Leu Leu Asp Asn Lys Val Gln His Tyr Ser Phe Phe	
420 425 430	
ggt gta gaa cag gca aac tgg gac aac ttc acg ctt gaa gga ggc gta	1344
Gly Val Glu Gln Ala Asn Trp Asp Asn Phe Thr Leu Glu Gly Gly Val	
435 440 445	
cgc gtg gaa aaa caa aaa gcc tcc att cag tac gac aaa gca ttg att	1392
Arg Val Glu Lys Gln Lys Ala Ser Ile Gln Tyr Asp Lys Ala Leu Ile	
450 455 460	
gat cgg gaa aac tac tac aac cac ccc ctg ccc gac ctc ggc gcg cac	1440
Asp Arg Glu Asn Tyr Tyr Asn His Pro Leu Pro Asp Leu Gly Ala His	
465 470 475 480	
cgc caa acc gcc cgc tca ttc gca ctt tcg ggc aac tgg tat ttc acg	1488
Arg Gln Thr Ala Arg Ser Phe Ala Leu Ser Gly Asn Trp Tyr Phe Thr	
485 490 495	

cca caa cac aaa ctc agc ctg acc gcc tcc cat cag gaa cgc ctg ccg	1536
Pro Gln His Lys Leu Ser Leu Thr Ala Ser His Gln Glu Arg Leu Pro	
500 505 510	
tca acg caa gag ctg tac gca cac ggc aaa cac gtc gcc acc aac acc	1584
Ser Thr Gln Glu Leu Tyr Ala His Gly Lys His Val Ala Thr Asn Thr	
515 520 525	
ttt gaa gtc ggc aac aaa cac ctc aac aaa gag cgt tcc aac aat atc	1632
Phe Glu Val Gly Asn Lys His Leu Asn Lys Glu Arg Ser Asn Asn Ile	
530 535 540	
gaa ctc gcg ctg ggc tac gaa ggc gac cgc tgg caa tac aat ctg gca	1680
Glu Leu Ala Leu Gly Tyr Glu Gly Asp Arg Trp Gln Tyr Asn Leu Ala	
545 550 555 560	
ctc tac cgc aac cgc ttc ggt aac tac att tac gcc caa acc tta aac	1728
Leu Tyr Arg Asn Arg Phe Gly Asn Tyr Ile Tyr Ala Gln Thr Leu Asn	
565 570 575	
gac gga cgc ggc ccc aaa tcc atc gaa gac gac agc gaa atg aag ctc	1776
Asp Gly Arg Gly Pro Lys Ser Ile Glu Asp Asp Ser Glu Met Lys Leu	
580 585 590	
gtg cgc tac aac caa tcc ggc gcc gac ttc tac ggc gcg gaa ggc gaa	1824
Val Arg Tyr Asn Gln Ser Gly Ala Asp Phe Tyr Gly Ala Glu Gly Glu	
595 600 605	
atc tac ttc aaa ccg aca ccg cgc tac cgc atc ggc gtt tcc ggc gac	1872
Ile Tyr Phe Lys Pro Thr Pro Arg Tyr Arg Ile Gly Val Ser Gly Asp	
610 615 620	
tat gta cga ggc cgt ctg aaa aac ctg cct tcc cta ccc ggc aga gaa	1920
Tyr Val Arg Gly Arg Leu Lys Asn Leu Pro Ser Leu Pro Gly Arg Glu	
625 630 635 640	
gat gcc tac ggc aac cgt cct ttc atc gca cag gac gac caa aat gcc	1968
Asp Ala Tyr Gly Asn Arg Pro Phe Ile Ala Gln Asp Asp Gln Asn Ala	
645 650 655	
ccc cgt gtt ccg gct gcg cgc ctc ggc ttc cac ctg aaa gcc tcg ctg	2016
Pro Arg Val Pro Ala Ala Arg Leu Gly Phe His Leu Lys Ala Ser Leu	
660 665 670	
acc gac cgt atc gat gcc aat ttg gac tac tac cgc gtg ttc gcc caa	2064
Thr Asp Arg Ile Asp Ala Asn Leu Asp Tyr Tyr Arg Val Phe Ala Gln	
675 680 685	

aac aaa ctc gcc cgc tac gaa acg cgc acg ccc gga cac cat atg ctc 2112  
 Asn Lys Leu Ala Arg Tyr Glu Thr Arg Thr Pro Gly His His Met Leu  
 690 695 700

aac ctc ggc gca aac tac cgc cgc aat acg cgc tat ggc gag tgg aat 2160  
 Asn Leu Gly Ala Asn Tyr Arg Arg Asn Thr Arg Tyr Gly Glu Trp Asn  
 705 710 715 720

tgg tac gtc aaa gcc gac aac ctg ctc aac caa tcc gtt tac gcc cac 2208  
 Trp Tyr Val Lys Ala Asp Asn Leu Leu Asn Gln Ser Val Tyr Ala His  
 725 730 735

agc agc ttt ctc tct gat acg ccg caa atg ggc cgc agc ttt acc ggc 2256  
 Ser Ser Phe Leu Ser Asp Thr Pro Gln Met Gly Arg Ser Phe Thr Gly  
 740 745 750

ggc gtg aac gtg aag ttt taa 2277  
 Gly Val Asn Val Lys Phe  
 755

<210> 202

<211> 758

<212> PRT

<213> Neisseria meningitidis

<400> 202

Met Ala Gln Thr Thr Leu Lys Pro Ile Val Leu Ser Ile Leu Leu Ile  
 1 5 10 15

Asn Thr Pro Leu Leu Ala Gln Ala His Glu Thr Glu Gln Ser Val Asp  
 20 25 30

Leu Glu Thr Val Ser Val Val Gly Lys Ser Arg Pro Arg Ala Thr Ser  
 35 40 45

Gly Leu Leu His Thr Ser Thr Ala Ser Asp Lys Ile Ile Ser Gly Asp  
 50 55 60

Thr Leu Arg Gln Lys Ala Val Asn Leu Gly Asp Ala Leu Asp Gly Val  
 65 70 75 80

Pro Gly Ile His Ala Ser Gln Tyr Gly Gly Gly Ala Ser Ala Pro Val  
 85 90 95

Ile Arg Gly Gln Thr Gly Arg Arg Ile Lys Val Leu Asn His His Gly  
 100 105 110



Glu Thr Gly Asp Met Ala Asp Phe Ser Pro Asp His Ala Ile Met Val  
 115 120 125  
 Asp Thr Ala Leu Ser Gln Gln Val Glu Ile Leu Arg Gly Pro Val Thr  
 130 135 140  
 Leu Leu Tyr Ser Ser Gly Asn Val Ala Gly Leu Val Asp Val Ala Asp  
 145 150 155 160  
 Gly Lys Ile Pro Glu Lys Met Pro Glu Asn Gly Val Ser Gly Glu Leu  
 165 170 175  
 Gly Leu Arg Leu Ser Ser Gly Asn Leu Glu Lys Leu Thr Ser Gly Gly  
 180 185 190  
 Ile Asn Ile Gly Leu Gly Lys Asn Phe Val Leu His Thr Glu Gly Leu  
 195 200 205  
 Tyr Arg Lys Ser Gly Asp Tyr Ala Val Pro Arg Tyr Arg Asn Leu Lys  
 210 215 220  
 Arg Leu Pro Asp Ser His Ala Asp Ser Gln Thr Gly Ser Ile Gly Leu  
 225 230 235 240  
 Ser Trp Val Gly Glu Lys Gly Phe Ile Gly Val Ala Tyr Ser Asp Arg  
 245 250 255  
 Arg Asp Gln Tyr Gly Leu Pro Ala His Ser His Glu Tyr Asp Asp Cys  
 260 265 270  
 His Ala Asp Ile Ile Trp Gln Lys Ser Leu Ile Asn Lys Arg Tyr Leu  
 275 280 285  
 Gln Leu Tyr Pro His Leu Leu Thr Glu Glu Asp Ile Asp Tyr Asp Asn  
 290 295 300  
 Pro Gly Leu Ser Cys Gly Phe His Asp Asp Asp Asn Ala His Ala His  
 305 310 315 320  
 Thr His Ser Gly Arg Pro Trp Ile Asp Leu Arg Asn Lys Arg Tyr Glu  
 325 330 335  
 Leu Arg Ala Glu Trp Lys Gln Pro Phe Pro Gly Phe Glu Ala Leu Arg  
 340 345 350  
 Val His Leu Asn Arg Asn Asp Tyr Arg His Asp Glu Lys Ala Gly Asp  
 355 360 365

Ala Val Glu Asn Phe Phe Asn Asn Gln Thr Gln Asn Ala Arg Ile Glu  
 370 375 380

Leu Arg His Gln Pro Ile Gly Arg Leu Lys Gly Ser Trp Gly Val Gln  
 385 390 395 400

Tyr Leu Gln Gln Lys Ser Ser Ala Leu Ser Ala Ile Ser Glu Ala Val  
 405 410 415

Lys Gln Pro Met Leu Leu Asp Asn Lys Val Gln His Tyr Ser Phe Phe  
 420 425 430

Gly Val Glu Gln Ala Asn Trp Asp Asn Phe Thr Leu Glu Gly Gly Val  
 435 440 445

Arg Val Glu Lys Gln Lys Ala Ser Ile Gln Tyr Asp Lys Ala Leu Ile  
 450 455 460

Asp Arg Glu Asn Tyr Tyr Asn His Pro Leu Pro Asp Leu Gly Ala His  
 465 470 475 480

Arg Gln Thr Ala Arg Ser Phe Ala Leu Ser Gly Asn Trp Tyr Phe Thr  
 485 490 495

Pro Gln His Lys Leu Ser Leu Thr Ala Ser His Gln Glu Arg Leu Pro  
 500 505 510

Ser Thr Gln Glu Leu Tyr Ala His Gly Lys His Val Ala Thr Asn Thr  
 515 520 525

Phe Glu Val Gly Asn Lys His Leu Asn Lys Glu Arg Ser Asn Asn Ile  
 530 535 540

Glu Leu Ala Leu Gly Tyr Glu Gly Asp Arg Trp Gln Tyr Asn Leu Ala  
 545 550 555 560

Leu Tyr Arg Asn Arg Phe Gly Asn Tyr Ile Tyr Ala Gln Thr Leu Asn  
 565 570 575

Asp Gly Arg Gly Pro Lys Ser Ile Glu Asp Asp Ser Glu Met Lys Leu  
 580 585 590

Val Arg Tyr Asn Gln Ser Gly Ala Asp Phe Tyr Gly Ala Glu Gly Glu  
 595 600 605

Ile Tyr Phe Lys Pro Thr Pro Arg Tyr Arg Ile Gly Val Ser Gly Asp  
 610 615 620

Tyr Val Arg Gly Arg Leu Lys Asn Leu Pro Ser Leu Pro Gly Arg Glu  
625 630 635 640

Asp Ala Tyr Gly Asn Arg Pro Phe Ile Ala Gln Asp Asp Gln Asn Ala  
645 650 655

Pro Arg Val Pro Ala Ala Arg Leu Gly Phe His Leu Lys Ala Ser Leu  
660 665 670

Thr Asp Arg Ile Asp Ala Asn Leu Asp Tyr Tyr Arg Val Phe Ala Gln  
675 680 685

Asn Lys Leu Ala Arg Tyr Glu Thr Arg Thr Pro Gly His His Met Leu  
690 695 700

Asn Leu Gly Ala Asn Tyr Arg Arg Asn Thr Arg Tyr Gly Glu Trp Asn  
705 710 715 720

Trp Tyr Val Lys Ala Asp Asn Leu Leu Asn Gln Ser Val Tyr Ala His  
725 730 735

Ser Ser Phe Leu Ser Asp Thr Pro Gln Met Gly Arg Ser Phe Thr Gly  
740 745 750

Gly Val Asn Val Lys Phe  
755

<210> 203

<211> 225

<212> DNA

<213> *Neisseria meningitidis*

<220>

<221> CDS

<222> (1)..(225)

<400> 203

atg agg ctg gca acc aag gat ttg gcg gaa gcc att agg aaa gga cag 48  
Met Arg Leu Ala Thr Lys Asp Leu Ala Glu Ala Ile Arg Lys Gly Gln  
1 5 10 15

gtt cgc aaa tca agc ttt aac aca gaa caa tta agg gca att gaa aaa 96  
Val Arg Lys Ser Ser Phe Asn Thr Glu Gln Leu Arg Ala Ile Glu Lys  
20 25 30

gga gaa tct aaa ata ccg gat tac act tgg cat cat cat caa gat aca 144  
 Gly Glu Ser Lys Ile Pro Asp Tyr Thr Trp His His His Gln Asp Thr  
                   35                                  40                                  45

gga agg atg caa ttg att cgt gaa ggc ttg cat cat gat acc ggc cat 192  
 Gly Arg Met Gln Leu Ile Arg Glu Gly Leu His His Asp Thr Gly His  
                   50                                  55                                  60

att ggt tgg gaa gca atg aac aaa gga agg taa 225  
 Ile Gly Trp Glu Ala Met Asn Lys Gly Arg  
                   65                                  70                                  75

<210> 204

<211> 74

<212> PRT

<213> Neisseria meningitidis

<400> 204

Met Arg Leu Ala Thr Lys Asp Leu Ala Glu Ala Ile Arg Lys Gly Gln  
                   1                                  5                                  10                                  15

Val Arg Lys Ser Ser Phe Asn Thr Glu Gln Leu Arg Ala Ile Glu Lys  
                                   20                                  25                                  30

Gly Glu Ser Lys Ile Pro Asp Tyr Thr Trp His His His Gln Asp Thr  
                   35                                  40                                  45

Gly Arg Met Gln Leu Ile Arg Glu Gly Leu His His Asp Thr Gly His  
                   50                                  55                                  60

Ile Gly Trp Glu Ala Met Asn Lys Gly Arg  
                   65                                  70

<210> 205

<211> 1176

<212> DNA

<213> Neisseria meningitidis

<220>

<221> CDS

<222> (1)..(1176)

<400> 205

atg gca aaa atg atg aaa tgg gcg gct gtt gcg gcg gtc gcg gcg gca 48  
 Met Ala Lys Met Met Lys Trp Ala Ala Val Ala Ala Val Ala Ala Ala

1	5	10	15	
gcg gtt tgg ggc gga tgg tct tat ctg aag ccc gag ccg cag gct gct				96
Ala Val Trp Gly Gly Trp Ser Tyr Leu Lys Pro Glu Pro Gln Ala Ala				
20	25	30		
tat att acg gaa acg gtc agg cgc ggc gac atc agc cgg acg gtt tct				144
Tyr Ile Thr Glu Thr Val Arg Arg Gly Asp Ile Ser Arg Thr Val Ser				
35	40	45		
gca aca ggg gag att tcg ccg tcc aac ctg gta tcg gtc ggc gcg cag				192
Ala Thr Gly Glu Ile Ser Pro Ser Asn Leu Val Ser Val Gly Ala Gln				
50	55	60		
gca tcg ggg cag att aag aaa ctt tat gtc aaa ctc ggg caa cag gtt				240
Ala Ser Gly Gln Ile Lys Lys Leu Tyr Val Lys Leu Gly Gln Gln Val				
65	70	75	80	
aaa aag ggc gat ttg att gcg gaa atc aat tcg acc tcg cag acc aat				288
Lys Lys Gly Asp Leu Ile Ala Glu Ile Asn Ser Thr Ser Gln Thr Asn				
85	90	95		
acg ctc aat acg gaa aaa tcc aaa ttg gaa acg tat cag gcg aag ctg				336
Thr Leu Asn Thr Glu Lys Ser Lys Leu Glu Thr Tyr Gln Ala Lys Leu				
100	105	110		
gtg tcg gca cag att gca ttg ggc agc gcg gag aag aaa tat aag cgt				384
Val Ser Ala Gln Ile Ala Leu Gly Ser Ala Glu Lys Lys Tyr Lys Arg				
115	120	125		
cag gcg gcg ttg tgg aag gat gat gcg acc gct aaa gaa gat ttg gaa				432
Gln Ala Ala Leu Trp Lys Asp Asp Ala Thr Ala Lys Glu Asp Leu Glu				
130	135	140		
agc gca cag gat gcg ctt gcc gcc gcc aaa gcc aat gtt gcc gag ctg				480
Ser Ala Gln Asp Ala Leu Ala Ala Ala Lys Ala Asn Val Ala Glu Leu				
145	150	155	160	
aag gct cta atc aga cag agc aaa att tcc atc aat acc gcc gag tcg				528
Lys Ala Leu Ile Arg Gln Ser Lys Ile Ser Ile Asn Thr Ala Glu Ser				
165	170	175		
gaa ttg ggc tac acg cgc att acc gca acg atg gac ggc acg gtg gtg				576
Glu Leu Gly Tyr Thr Arg Ile Thr Ala Thr Met Asp Gly Thr Val Val				
180	185	190		
gcg att ctc gtg gaa gag ggg cag act gtg aac gcg gcg cag tct acg				624
Ala Ile Leu Val Glu Glu Gly Gln Thr Val Asn Ala Ala Gln Ser Thr				

195	200	205	
ccg acg att gtc caa ttg gcg aat ctg gat atg atg ttg aac aaa atg			672
Pro Thr Ile Val Gln Leu Ala Asn Leu Asp Met Met Leu Asn Lys Met			
210	215	220	
cag att gcc gag ggc gat att acc aag gtg aag gcg ggg cag gat att			720
Gln Ile Ala Glu Gly Asp Ile Thr Lys Val Lys Ala Gly Gln Asp Ile			
225	230	235	240
tcg ttt acg att ttg tcc gaa ccg gat acg ccg att aag gcg aag ctc			768
Ser Phe Thr Ile Leu Ser Glu Pro Asp Thr Pro Ile Lys Ala Lys Leu			
245	250	255	
gac agc gtc gac ccc ggg ctg acc acg atg tcg tcg ggc ggc tac aac			816
Asp Ser Val Asp Pro Gly Leu Thr Thr Met Ser Ser Gly Gly Tyr Asn			
260	265	270	
agc agt acg gat acg gct tcc aat gcg gtc tac tat tat gcc cgt tcg			864
Ser Ser Thr Asp Thr Ala Ser Asn Ala Val Tyr Tyr Tyr Ala Arg Ser			
275	280	285	
ttt gtg ccg aat ccg gac ggc aaa ctc gcc acg ggg atg acg acg cag			912
Phe Val Pro Asn Pro Asp Gly Lys Leu Ala Thr Gly Met Thr Thr Gln			
290	295	300	
aat acg gtt gaa atc gac ggt gtg aaa aat gtg ctg att att ccg tcg			960
Asn Thr Val Glu Ile Asp Gly Val Lys Asn Val Leu Ile Ile Pro Ser			
305	310	315	320
ctg acc gtg aaa aat cgc ggc ggc agg gcg ttt gtg cgc gtg ttg ggt			1008
Leu Thr Val Lys Asn Arg Gly Gly Arg Ala Phe Val Arg Val Leu Gly			
325	330	335	
gca gac ggc aag gcg gcg gaa cgc gaa atc cgg acc ggt atg aga gac			1056
Ala Asp Gly Lys Ala Ala Glu Arg Glu Ile Arg Thr Gly Met Arg Asp			
340	345	350	
agt atg aat acc gaa gta aaa agc ggg ttg aaa gag ggg gac aaa gtg			1104
Ser Met Asn Thr Glu Val Lys Ser Gly Leu Lys Glu Gly Asp Lys Val			
355	360	365	
gtc atc tcc gaa ata acc gcc gcc gag cag cag gaa agc ggc gaa cgc			1152
Val Ile Ser Glu Ile Thr Ala Ala Glu Gln Gln Glu Ser Gly Glu Arg			
370	375	380	
gcc cta ggc ggc ccg ccg cgc cga			1176
Ala Leu Gly Gly Pro Pro Arg Arg			

385

390

&lt;210&gt; 206

&lt;211&gt; 392

&lt;212&gt; PRT

&lt;213&gt; Neisseria meningitidis

&lt;400&gt; 206

Met Ala Lys Met Met Lys Trp Ala Ala Val Ala Ala Val Ala Ala Ala  
 1 5 10 15

Ala Val Trp Gly Gly Trp Ser Tyr Leu Lys Pro Glu Pro Gln Ala Ala  
 20 25 30

Tyr Ile Thr Glu Thr Val Arg Arg Gly Asp Ile Ser Arg Thr Val Ser  
 35 40 45

Ala Thr Gly Glu Ile Ser Pro Ser Asn Leu Val Ser Val Gly Ala Gln  
 50 55 60

Ala Ser Gly Gln Ile Lys Lys Leu Tyr Val Lys Leu Gly Gln Gln Val  
 65 70 75 80

Lys Lys Gly Asp Leu Ile Ala Glu Ile Asn Ser Thr Ser Gln Thr Asn  
 85 90 95

Thr Leu Asn Thr Glu Lys Ser Lys Leu Glu Thr Tyr Gln Ala Lys Leu  
 100 105 110

Val Ser Ala Gln Ile Ala Leu Gly Ser Ala Glu Lys Lys Tyr Lys Arg  
 115 120 125

Gln Ala Ala Leu Trp Lys Asp Asp Ala Thr Ala Lys Glu Asp Leu Glu  
 130 135 140

Ser Ala Gln Asp Ala Leu Ala Ala Ala Lys Ala Asn Val Ala Glu Leu  
 145 150 155 160

Lys Ala Leu Ile Arg Gln Ser Lys Ile Ser Ile Asn Thr Ala Glu Ser  
 165 170 175

Glu Leu Gly Tyr Thr Arg Ile Thr Ala Thr Met Asp Gly Thr Val Val  
 180 185 190

Ala Ile Leu Val Glu Glu Gly Gln Thr Val Asn Ala Ala Gln Ser Thr  
 195 200 205

Pro Thr Ile Val Gln Leu Ala Asn Leu Asp Met Met Leu Asn Lys Met  
 210 215 220  
 Gln Ile Ala Glu Gly Asp Ile Thr Lys Val Lys Ala Gly Gln Asp Ile  
 225 230 235 240  
 Ser Phe Thr Ile Leu Ser Glu Pro Asp Thr Pro Ile Lys Ala Lys Leu  
 245 250 255  
 Asp Ser Val Asp Pro Gly Leu Thr Thr Met Ser Ser Gly Gly Tyr Asn  
 260 265 270  
 Ser Ser Thr Asp Thr Ala Ser Asn Ala Val Tyr Tyr Tyr Ala Arg Ser  
 275 280 285  
 Phe Val Pro Asn Pro Asp Gly Lys Leu Ala Thr Gly Met Thr Thr Gln  
 290 295 300  
 Asn Thr Val Glu Ile Asp Gly Val Lys Asn Val Leu Ile Ile Pro Ser  
 305 310 315 320  
 Leu Thr Val Lys Asn Arg Gly Gly Arg Ala Phe Val Arg Val Leu Gly  
 325 330 335  
 Ala Asp Gly Lys Ala Ala Glu Arg Glu Ile Arg Thr Gly Met Arg Asp  
 340 345 350  
 Ser Met Asn Thr Glu Val Lys Ser Gly Leu Lys Glu Gly Asp Lys Val  
 355 360 365  
 Val Ile Ser Glu Ile Thr Ala Ala Glu Gln Gln Glu Ser Gly Glu Arg  
 370 375 380  
 Ala Leu Gly Gly Pro Pro Arg Arg  
 385 390

&lt;210&gt; 207

&lt;211&gt; 342

&lt;212&gt; DNA

&lt;213&gt; Neisseria meningitidis

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(342)

&lt;400&gt; 207



ttg ttt gta tgc ttt gaa aaa tgt ttg ttt ccg gat ttt gcc att ccc 48  
 Leu Phe Val Cys Phe Glu Lys Cys Leu Phe Pro Asp Phe Ala Ile Pro  
 1 5 10 15

atc cgg ttt tgc gct gta cga tgt gtt tta gcg cgg act tgc tca aaa 96  
 Ile Arg Phe Cys Ala Val Arg Cys Val Leu Ala Arg Thr Cys Ser Lys  
 20 25 30

tcg gat gtg gtt ccg gta ttt ggg gct ttg att agg gat gcg gac ttt 144  
 Ser Asp Val Val Pro Val Phe Gly Ala Leu Ile Arg Asp Ala Asp Phe  
 35 40 45

caa tat att ttt ctc agc tac aac aac gaa ggc ttg atg tct gtc ggg 192  
 Gln Tyr Ile Phe Leu Ser Tyr Asn Asn Glu Gly Leu Met Ser Val Gly  
 50 55 60

cag gta agg gag att ttt gag cgt ttc ggc aaa tat aat ttg gtt caa 240  
 Gln Val Arg Glu Ile Phe Glu Arg Phe Gly Lys Tyr Asn Leu Val Gln  
 65 70 75 80

acg gaa tat cgg cgt ttt aag gca gat aag aca gaa aac cgt aat cat 288  
 Thr Glu Tyr Arg Arg Phe Lys Ala Asp Lys Thr Glu Asn Arg Asn His  
 85 90 95

aag gca aat tcg ata ttc gaa tat ctg cat gag acc ttt gca aaa ata 336  
 Lys Ala Asn Ser Ile Phe Glu Tyr Leu His Glu Thr Phe Ala Lys Ile  
 100 105 110

gtc tgt 342  
 Val Cys

<210> 208

<211> 114

<212> PRT

<213> Neisseria meningitidis

<400> 208

Leu Phe Val Cys Phe Glu Lys Cys Leu Phe Pro Asp Phe Ala Ile Pro  
 1 5 10 15

Ile Arg Phe Cys Ala Val Arg Cys Val Leu Ala Arg Thr Cys Ser Lys  
 20 25 30

Ser Asp Val Val Pro Val Phe Gly Ala Leu Ile Arg Asp Ala Asp Phe  
 35 40 45

Gln Tyr Ile Phe Leu Ser Tyr Asn Asn Glu Gly Leu Met Ser Val Gly

50                                      55                                      60  
 Gln Val Arg Glu Ile Phe Glu Arg Phe Gly Lys Tyr Asn Leu Val Gln  
 65                                      70                                      75                                      80  
 Thr Glu Tyr Arg Arg Phe Lys Ala Asp Lys Thr Glu Asn Arg Asn His  
                                     85                                      90                                      95  
 Lys Ala Asn Ser Ile Phe Glu Tyr Leu His Glu Thr Phe Ala Lys Ile  
                                     100                                      105                                      110  
 Val Cys

<210> 209

<211> 24

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:Primer Sequence

<400> 209

ttgggtaatt ggttgtaaca ctgg 24

<210> 210

<211> 19

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:Primer Sequence

<400> 210

attctcatgt ttgacagcg 19

<210> 211

<211> 18

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:Primer Sequence

<400> 211  
atcctacaac ctcaagct 18

<210> 212  
<211> 18  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence:Primer Sequence

<400> 212  
atcccattct aaccaagc 18

<210> 213  
<211> 19  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence:Primer Sequence

<400> 213  
aagagattac gcgcagacc 19

<210> 214  
<211> 18  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence:Primer Sequence

<400> 214  
aatacgcaac cgcctctc 18